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CHEMOTHERAPY OF CHOLERA WITH A NEW SULPHONAMIDE COMPOUND ("6257")

LABORATORY INVESTIGATIONS AND FIELD TRIALS

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For a number of years Rogers's hypertonic saline and palliative drug therapy has formed the sheet anchor for the treatment of cholera. Recently sulphaguanidine has been aligned to it, particularly through the efforts of workers in Bengal, and has given encouraging results (Chopra *et al.*, 1941 ; Carruthers, 1942 ; Misra, 1944 ; Huang, 1944 ; Lahiri, 1945 ; Seal, 1946, 1947 ; and others).

An observation by one of us (S.S.B.) since 1939, that hexamethylenetetramine in a 10% solution in normal saline killed cholera vibrio in less than half an hour up to a concentration of 1 in 10^{12}, resulted in the production of a few compounds of hexamine linkage to sulphanilamide experiments with which on animal and human cholera infection, though interrupted by conditions of field service, gave hope of successful chemotherapy against this disease. From a chance discussion with the scientific department of Ciba (Basle) it transpired that their investigators (Meier, 1946 ; Druey, 1948), after studying a large series of sulpha derivatives of low solubility, had condensed a product—"6257"—of two molecules of sulphathiazole ("cibazol") and three molecules of formaldehyde with the formula $C_{21}H_{22}O_6N_6S_4$, the molecular configuration not having yet been worked out. The present study relates to *in vitro* and *in vivo* experiments with this compound against the cholera vibrio and to field trials on human cholera infection.

Laboratory Investigations

Culture.—The Inaba and Ogawa strains of *Vibrio cholerae*, grown on meat-infusion alkaline "bacto" agar (*p*H 8) at 37° C. for 18 to 24 hours, provided the test inocula for all the experiments. After suitable dilution with normal saline the initial bacterial concentration was estimated by opacity and controlled by pour-plate counts.

Drug Concentration.—The compound "6257" being only slightly soluble in water, it was suspended by means of 2% gum arabic in distilled water. A 20% drug suspension—the "standard drug suspension" of the text—was initially prepared and sterilized at 100° C. for 10 minutes only, this exposure being sufficient for the purpose. This suspension was suitably diluted as required.

Test Mixtures.—All *in vitro* experiments were carried out in 10 ml. of "difco bacto" peptone water (*p*H 8) to which was added the requisite amount of the drug and the required number of bacterial cells, each suspended in 0.1 ml. volume. Peptone water not only is an excellent medium for the growth of the cholera vibrio, but its use also eliminates the possibility of erroneous results due to acid fermentation of the carbohydrate likely to be found in a meat-infusion substrate. The test mixtures and the control tubes were incubated at 37° C. (± 0.5° C.). It was not found necessary to raise the temperature of incubation any higher to witness bactericidal and growth-inhibiting activity, as has been the experience with other sulpha derivatives (White, 1939). At various periods after incubation (6, 12, and 24 hours) a measured amount of the fluid was withdrawn and serially diluted to seed alkaline agar plates for the purpose of counting the number of viable organisms.

Animal Experiments.—Adult mice of uniform stock, 20–25 g. in weight, were employed in groups of 20 as an experimental unit, the controls being one-half this number. The Inaba strain was mouse-passaged till the cholera vibrio attained a virulence resulting in 100% deaths of untreated mice with a dose of 2,000 million organisms administered intraperitoneally. Twice this number (4,000 millions) was the test dose in the experiments reported here. Higher multiples of M.L.D. were given up after a few preliminary experiments on account of the danger of mortality from toxic action alone. The test dose consisted of organisms freshly isolated from the intraperitoneal fluid of dead mice and grown only once on alkaline agar, since the cholera vibrio loses its virulence quickly when subcultured frequently.

In relation to the time of infection, the drug therapy was divided into (i) a pre-infective period of 48 hours, and (ii) a post-infective period of 96 hours The dosage is indicated in Table II. Oral feeding was carried out directly into the stomach of the animal with a special curved bulb-ended needle and syringe. This procedure was found to be simpler and more accurate than the drug–diet intake method No local irritation was observed after subcutaneous therapy.

Determinations of the blood concentration of the drug were carried out on non-infected animals given identical dosage, since frequent handling and bleeding of infected mice produced inconsistent results. The methods employed were those advocated by Bratton and Marshall (1939) and Churg and Lehr (1941).

In vitro Activity of "6257"

Serial dilutions of the sterile "standard drug suspension" were titrated against inocula of different size. The results of one of these experiments are reproduced in Table I.

TABLE I.—*In vitro Activity of "6257" on the Inaba Strain of Vibrio cholerae: Bactericidal and Bacteriostatic Action*

Dilution of 20% Standard Drug Suspension	Total Concentration of Drug (mg.)	Inoculum: Total No. of Bacterial Cells	Growth at 37° C. Colony Counts Hours after Incubation		
			6	12	24
Control	0	1×10^6	C	C	C
1 : 50	200·00	,,	—	—	—
1 : 100	100·00	,,	—	—	—
1 : 200	50·00	,,	4×10^4	4×10^4	—
1 : 300	33·33	,,	9×10^5	$1{\cdot}5 \times 10^6$	—
1 : 400	25·00	,,	$6{\cdot}5 \times 10^6$	18×10^6	9×10^4
1 : 500	20·00	,,	8×10^6	C	26×10^6
1 : 600	16·66	,,	C	C	34×10^6
1 : 700	14·28	,,	C	C	44×10^6
1 : 800	12·50	,,	C	C	60×10^6
1 : 1,000	10·00	,,	C	C	C
1 : 2,000	5·00	,,	C	C	C

C Indicates confluent growth. — Indicates no growth.
Columns 4, 5, and 6 show the total number of viable organisms in the test mixture.

The Table shows that a marked bactericidal and inhibitory activity is exercised by "6257" on the Inaba strain of *Vibrio cholerae*. Similar results were obtained with the Ogawa strain.

When an inoculum of one million cholera vibrios was incubated with 200, 100, 50, and 33.3 mg. of the compound for 24 hours, samples plated on alkaline agar remained sterile. Further confirmation of this finding was obtained by subjecting the total volume of 10.2 ml. of the test mixtures to two other viability tests—namely, fractional division over 10 plates by the pour-plate method, when there was complete absence of colonies after 48 hours' incubation, and fractional transfer into 100 tubes of glucose-peptone water, with Andrade's indicator. In the latter test the absence of turbidity and acid fermentation, after similar incubation, was taken as an index of non-viability.

Two other possible pitfalls in these tests were also excluded—namely, (*a*) there was no adverse effect of increase in hydrogen-ion concentration consequent on bacterial multiplication, since the *p*H values of the test mixtures were found not to exceed 8.6, and (*b*) there was no bactericidal activity of gum arabic *per se*.

It would appear that the drug has both bactericidal and bacteriostatic activity.

In vivo Activity of "6257"

The experiment recorded in Table II confirms the result of the *in vitro* tests. When the drug was administered by the intraperitoneal and subcutaneous routes it exercised a powerful protective action on cholera-infected mice. With the oral method, however, it was not possible to save more than 20% of the animals.

Post-mortem examination revealed that intraperitoneal cholera infection was followed by invasion of the tissues within a few hours, the infecting organism being isolated from heart-blood, liver, and spleen. Biochemical examination of the blood showed that the absorption of "6257" by the parenteral routes was slow, and still more so when given by mouth. The excretion of the drug being equally slow, a much flatter concentration curve in comparison with other sulpha derivatives was the result. Prior to infection, therefore, an effective blood level was initiated with 80–90 mg. of the drug, and was maintained with a daily dosage of 40 mg. in the post-infective period for four days, in the belief that, *vis-à-vis* rapid mouse septicaemia, the therapeutic results could be conditioned only by the concentration of the drug in the blood and the tissues. That this assumption was correct was borne out by the results obtained—i.e., 100% protection by the intraperitoneal and subcutaneous routes and only 20% survival through oral therapy.

TABLE II.—*In vivo Activity of "6257"*

Route of Administration	Treatment: Daily Dosage in mg. Before Infection No. of Days 1	2	After Infection No. of Days 1	2	3	4	Test Dose Inoculated Intraperitoneally 4,000 million Organisms	No. of Mice Infected	Survivors No.	Survivors %
Intraperitoneal	50	40	40	40	40	40	2 M.L.D.	20	20	100
Subcutaneous	50	40	40	40	40	40	2 ,,	20	20	100
Oral	50	40	40	40	40	40	2 ,,	20	4	20
Controls							2 ,, live	10	0	0
							2 ,, boiled culture	10	10	100

Field Trials

In all, 85 cases of cholera were treated in 27 villages in the "*talukas*" of Kumbhakonam, Tiruvarur, and Negapatam of the Tanjore district, in the south-east of Madras Presidency, during November and December. Records for the past seven years show that the disease could be considered to be endemic in that area, and its highest incidence was from September to February, with a case mortality in the region of 60%. The patients were treated in their homes without the benefit of nursing and general medical care, and no complementary treatment in the form of saline and palliative drug therapy was resorted to.

Bacteriological Diagnosis.—In all the cases the diagnosis was established by the following procedure, minor details being omitted.

A capillary-pipette drop of a saline suspension of the stool, standardized by opacity, was transferred to Dunham's peptone water (*p*H 8) and incubated at 37° C. The pellicle from the growth developing in 8 to 24 hours was plated on to MacConkey's agar. This medium offered the advantage that the non-lactose-fermenting cholera vibrio could be easily differentiated from lactose fermenters for the purpose of quantitative studies, referred to later. After morphological examination five to six suspected colonies were transferred on to an alkaline agar slope and the growth tested against a mixed Inaba–Ogawa agglutinating rabbit serum (titre 1 in 5,000).

Classification of Cases.—The typical symptoms of cholera—purgation, rice-water stools, vomiting, dehydration, anuria, algidity, cramps, imperceptible pulse, and an apathetic-to-comatose mental state—were encountered in different combinations. The clinical picture could be differentiated into three stages of infection according to severity and, what was important from our point of view, to the period at which the treatment was started: (1) The primary stage, in which purgation was the main feature with little or no vomiting and no prostration—the "moderately severe" cases. It was difficult to contact these patients because the difficulties of transport caused delay in notification. (2) The secondary stage, characterized by passage of rice-water stools, frequent vomiting, and

prostration but no anuria—referred to as "severe" cases. (3) The critical stage, of which anuria and dehydration were the marked features, with a semi-comatose condition, algidity, imperceptible pulse, and body cramps. The term "serious" is here applied to these cases.

Table III summarizes some of the salient features of the cases treated during the course of a cholera outbreak in an endemic area. The great majority of the patients belonged to the "untouchable" labouring class, many of them women and children, with one feature common to all—malnutrition. The outbreak was characterized as severe by the local health authorities. This was borne out by the galloping march of symptoms, the patient being dangerously ill six to eight hours after the initial clinical manifestations, with dehydration and all its sequelae.

TABLE III.—*Analysis of Treated Cholera Cases*

Clinical Course	No. Treated	No. Surviving	Sex		Age Groups (Years)								Inoculated		Uninoculated
			Male	Female	5–10	10–20	20–30	30–40	40–50	50–60	60–70	70–80	No. Attacked	No. Attacked in Negative Phase	
Moderately severe cases (primary stage)	12	12	4	8	2	7	2	1	—	—	—	—	2	—	10
Severe cases (secondary stage)	16	16	7	9	3	2	5	4	1	1	—	—	3	—	13
Serious cases (critical stage)	57	54	24	33	10	8	15	9	11	2	1	1	11	11	46
Total	85	82	35	50	15	17	22	14	12	3	1	1	16	11	69

The scarcity of the drug precluded us from treating more than 85 cases: the total quantity available for the trial was 1,800 g. in the form of powder and in tablets of 0.5 g.

Treatment and Results

The average amount given was 16 g. for a child, 23 g. for an adult female, and 25–30 g. for an adult male, according to the scheme shown in Table IV.

TABLE IV.—*Dosage of "6257" for Oral Treatment of Cholera Patients*

Day of Treatment	Daily Dosage (Grammes)		
	Children	Women	Men
1st	6	10	10
2nd	4	4	6
3rd	2	4	4
4th	1	2	2
5th	1	1	1
6th	1	1	1
7th	1	1	1

The subcutaneous route was first tried in view of the results of the experiments in mice. It soon became clear, however, that parenteral therapy did not bring about any clinical amelioration. Obviously the treatment of cholera septicaemia in the mouse could not serve as a guide to the treatment of human disease, which in the bacteriological sense is confined to the intestinal tract alone.

Oral therapy was therefore practised and it immediately gave gratifying results. The pleasant observation also was made that "6257," in sharp contrast to other sulpha derivatives, including sulphaguanidine, had no appreciable toxic effects. As much as 50 g. was administered to some of the cases without causing or accentuating nausea or vomiting. On a few occasions when blood was examined for agranulocytosis the findings were negative. Four women in advanced stages of pregnancy were treated successfully without any ill effects.

The retention of the drug in the presence of frequent vomiting was achieved by substituting 0.5-g. tablets in place of the powder, two tablets being given fractionally every 10 to 15 minutes until the full dose of 6 g. was ingested in the course of two to three hours. In six cases where this practice did not succeed, on account of hyperemesis and a comatose condition, the drug was given per rectum in a 6-g. dose suspended in gum arabic in 50 ml. volume, high up the colon, by the employment of a long piece of rubber tubing. The beneficial effect of this measure made it possible to proceed with the second dose orally.

The earlier cases were given the drug more frequently, in smaller doses. Experience, however, showed that to get the best and quickest results it was essential to start with a large dose of 6 g. and to follow it with another large dose of 4 g. four hours later, and then to watch carefully the progress of the case. Six to eight hours after starting treatment purgation diminished and vomiting stopped. By the ninth hour, as a rule, the patient had passed water, although in three seriously ill cases it took as long as 20 to 24 hours. Nourishment in the form of barley or rice "kunji" (decoction) greatly helped to restore the kidney function.

There was distinct improvement by the end of 24 hours. Purgation was much reduced and nausea, vomiting, and cramps were absent. Although the patient was weak and dehydrated, the pulse was perceptible and interest was taken in the surroundings. By the 48th hour the body was warm and dehydration reduced in proportion to fluid intake, which was insisted upon. By the morning of the fourth day the patient was convalescent and well on the way to recovery. As an illustration, the case histories of two patients—one treated orally and the other per rectum, with subsequent oral therapy—are here given.

Illustrative Cases

Case 27.—A man aged 40, uninoculated. Symptoms started at 3 a.m.; visited 12.45 p.m.; patient in critical stage; 5 motions; 7 vomits; dehydrated; comatose; anuria, cramps, pulse imperceptible, body cold. Treatment was as follows:—Dec. 3: 1 p.m., 6 g. powder, all vomited; 1.40 p.m., 6 g. tablets, retained; 8 p.m., 4 g. tablets, retained. Dec. 4: 8 a.m., 2 liquid motions during night; anuria persisted; 4 g. tablets, retained; 1 p.m., urine passed; no vomit; one liquid motion; dehydrated; apathetic. Dec. 5: 9.30 a.m., sitting up; pulse perceptible; one motion during night; still dehydrated and weak; 2 g. powder, retained; 5 p.m., cheerful; answers questions; fluids taken; dehydration less; 2 g. powder, retained. Dec. 6: 8 a.m., solid motion; free urine; body warm; rapid low-volume pulse; 1 g. powder; 6 p.m., 1 g. tablets. Dec. 7, 8, 9, 10: 0.5 g. tablet morning and evening; patient recovered.

Case 11.—A man aged 29, inoculated Nov. 23; symptoms. Nov. 25, 10 a.m.; visited, 6 p.m.; 10 motions; vomiting started 2 p.m.; no urine since 4 p.m.; body cold; pulse imperceptible; semi-comatose. Treatment was as follows:—Nov. 25: 6 p.m., powder by mouth not retained; tablets also brought up as vomit every 10 minutes. 9 p.m., 6 g. drug per rectum, most of it retained. 12 p.m., 4 g. tablets fractionally; about 2 g. retained. Nov. 26: 8 a.m., 4 rice-water motions during the night; nausea but no vomiting; body cold; pulse imperceptible; 6 g. tablets fractionally retained; 4 p.m., 2 motions; free flow of urine; dehydrated; semi-comatose; 4 g. powder, retained. Nov. 27: 9 a.m., 2 motions; free urine; dehydrated; faint

pulse; cold; 4 g. powder; 5 p.m., no motion; no vomiting; cheerful but weak; 2 g. powder. Nov. 28: 8 a.m., much better; semi-solid motion; body warm; pulse perceptible; dehydration much less; 2 g. powder. Nov. 28, 29, 30: 0.5 g. tablet morning and evening; patient recovered.

Mortality

Table III shows that all the cases in the primary and secondary stages of infection recovered, but three out of 57 cases in the critical stage could not be saved. In two of them the symptoms developed during the negative phase, within 12 hours after the inoculation of cholera vaccine, and were serious in character.

The first fatal case was that of a female, 25 years of age, who was visited 8 hours after the onset and responded well to 14 g. of the drug. Next morning, however, she was found by her neighbours in a state of collapse on the river bank, where she had gone to fetch water. She survived only two hours thereafter.

The second case was that of a man aged 63 with a long history of chronic diarrhoea who passed blood-stained stools in spite of treatment. He died within 10 hours as a result of anuria.

The third patient, a man aged 35, was visited within six hours of onset and given 11 g. of the drug in the next eight hours, the evening report being no motion and no vomit, but anuria persisting. The sanitary inspector, however, reported next morning that the patient had died in the middle of the night. A necropsy not being possible, it was presumed that he had succumbed to uraemia.

Epidemiological Significance of 7-day Therapy

As a rule, patients could be said to have recovered by the end of 72 hours; nevertheless, a schedule of treatment extending over seven days is advised. This recommendation is based on observations regarding the persistence of cholera vibrios in the stools of cases under treatment (for details see Fernandes, 1948). In the present series of cases the excreta could be said to be free from vibrios on the sixth day.

Another observation of epidemiological significance was the freedom of contacts from subsequent attacks of the disease though living in the restricted areas of cholera-infected hamlets. The seven-day drug therapy outlined in Table IV cannot therefore be too strongly recommended in the interest of the patient as well as that of the community.

Prophylactic Treatment in the Negative Phase following Cholera Vaccination

A matter that has not received sufficient consideration is the danger of possible precipitation of a serious attack of cholera from the common practice of protective inoculation of contacts, amongst whom may be persons who are harbouring the cholera vibrio or who may actually be in the incubation period of the disease. Similar experiences are known in the case of typhoid fever (Bhatnagar, Freeman, and Dhilon, 1937). Table III shows that of the 16 cases of cholera amongst the inoculated population as many as 11 were attacked in the negative phase, the infection being severe in all of them and responsible for two out of three deaths in this series.

In co-operation with the local health authorities, 4 g. of the drug, in two equal doses, was given morning and evening for two days immediately after inoculation to the contacts of treated cases in one of the villages. Although the figures are not sufficient for any conclusions to be drawn, the health authorities were struck by the freedom from infection of persons subjected to this simple therapy in comparison with those not so treated.

Discussion

The evidence presented here, in spite of its limitation in scope, clearly indicates the role of the compound "6257" in the treatment of cholera as well as in its prophylaxis. To deal with an epidemic effectively, the form of treatment at present practised necessitates the mobilization of a considerable amount of hospital accommodation, medical equipment, and personnel, all of which are limited in countries where the disease is endemic. In the absence of these amenities the results of our field trials emphasized the economic advantage of the method advocated. Considering the survival rate alone, our experiences compare very favourably with those of others obtained from the application of combined sulphaguanidine, saline, and palliative drug therapy.

Without minimizing the curative aspect of this treatment we attach very great importance to the *complete* freedom from cholera vibrios of the stools of treated cases—accomplished, as we have shown, by seven-day drug therapy. It was our experience that this simple measure brought about a very material reduction in the number of carriers, who, along with the prevailing insanitary conditions, are the backbone of any cholera epidemic, be it in an endemic area or following in the wake of big religious gatherings. If in addition the contacts of a case of cholera were protected by prophylactic treatment with the drug as indicated, particularly in the short negative phase after concomitant cholera inoculation, there is a possibility that this disease would cease to be a major problem of preventive medicine. Future trials on a more extensive scale will prove if the thesis advanced here is correct.

The preparation of "6257" by the molecular combination of two different chemical components is a departure from the common practice of obtaining sulpha derivatives by additions to, and the substitution of, the radicals of sulphanilamide. There are two references in the literature to attempts in the same direction—namely, the preparation of "septurit," a compound manufactured in the early days of sulphanilamide chemistry, and "strepturin" (Astrakhantsev and Vasil'ev, 1940), found by Russian scientists to be effective against streptococcal infection.

The two outstanding properties of "6257" that are in sharp contrast to those of other sulpha derivatives are: (*a*) the absence of toxicity within the zone of therapeutic action, tested both in laboratory animals and in human beings; and (*b*) its slow absorption from a subcutaneous "depot" and equally slow excretion from the system, so that blood concentration can be maintained at a higher level for a longer period of time. The first of these properties would presumably be attributable to the formaldehyde radical, a well-known detoxicant of bacterial toxins, whereas the second would appear to be related to the high molecular weight of the compound.

The absence of both these attributes, particularly the former, was responsible for relegating the sulpha compounds to a position in clinical therapy secondary to that of the antibiotics. If future experience showed that the therapeutic value of "6257," and that of other similarly prepared compounds possessing these two qualities, extends over a wider field of pathogenetically important bacterial species, it might be that sulpha derivatives would through these new compounds regain their place of priority in clinical therapy—a welcome reversion from the point of view of production as well as of economy.

Summary

The new compound "6257"—a condensation product of sulphathiazole ("cibazol") and formaldehyde—shows *in vitro* a marked bactericidal and growth-inhibiting action against *Vibrio cholerae*.

When administered parenterally to mice, it offers 100% protection against septicaemia resulting from intraperitoneal cholera infection. When given by mouth it is, however, not so successful. The discrepancy is due to low blood-concentration value of the drug.

When patients suffering from cholera in an endemic area during the course of an epidemic were treated in their homes in villages with this drug alone, in the absence of nursing, general medical care, and any form of adjuvant treatment, the survival rate compared very favourably with that obtained by present-day recognized therapy.

In the control of an epidemic of cholera the importance of *complete* freedom from cholera vibrio of the stools of cases treated by seven-day drug therapy, and the prophylactic treatment of contacts with the drug, is emphasized.

The role of two properties of this drug—namely, the absence of toxic action and slow absorption and slow excretion—is discussed in its bearing on future sulpha therapy as opposed to the antibiotics.

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TREATMENT OF RINGWORM OF THE SCALP

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Until recent years there was no reliable treatment of ringworm of the scalp which did not involve removal of infected hairs from their follicles by the use of *x* rays or thallium acetate or by producing a purulent folliculitis. The removal of infected hairs with masses of spores was in itself inadequate to effect a cure, but it so enhanced the effect of local treatment with fungicides that *x*-ray epilation became the accepted practice of dermatologists and reduced the duration of treatment from an indefinite number of years to one or two months. For example, a series of 100 cases of ringworm of the scalp were treated from Feb. 13 to Sept. 29, 1947, by Dr. McKenny, at St. John's Hospital for Diseases of the Skin, by *x*-ray epilation followed by the application of Whitfield's ointment and biweekly paintings with tincture of iodine. The *x*-ray technique was the irradiation of the usual five areas (Kienböck–Adamson) with a dose of approximately 400 r to each area at 90 kV, the half-value layer equivalent to 1.4 mm. of aluminium, and focal skin distance 9½ in. (24 cm.), the diameter of the active field being 5 in. (12.5 cm.). All the patients were examined by Wood's filtered ultra-violet light or microscopically, or both, to confirm the diagnosis and again about one month later, and then at intervals of two weeks until three examinations had been negative.

The average number of days for a cure was 38.4, but four cases required treatment for 85, 85, 151, and 160 days; thus the average period for cure in the other 96 was 35 days. These results are considered to be highly satisfactory, but they were obtained in a very well equipped and specialized clinic. Moreover, the *x*-ray technique is tedious and exacting and occupies at least an hour. Under such conditions the risk of any permanent alopecia is negligible and certainly much less than that of toxic reactions to thallium acetate, but the risks have to be borne in mind, and they have always brought anxiety to the doctor and to the parents of children under treatment.

It was therefore disappointing to find in our own experience and in that of Carrick (1946) and others that new and potent fungicides were no more effective in the treatment of scalp ringworm than the older remedies, and it was obvious that this must be due to their failure to penetrate the infected follicles. At first it was hoped to overcome this difficulty by using fat solvents such as acetone, benzene, carbon tetrachloride, chloroform, and alcohol containing iodine or benzoic and salicylic acids, but these met with little success.

The interesting fact that while microsporon infections of the scalp are common in children they are very rare in adults led to the discovery by Stephen Rothman and his co-workers (1946, 1947) that a certain fraction of the free fatty acids extracted from adult human hair was capable of inhibiting the growth of *Microsporon audouini* in concentrations of 0.0002–0.0005%. Pelargonic acid was the main constituent of this fraction, but no success followed its therapeutic use, probably because of its lack of penetrating power.

Penetrating Vehicles

Attention was therefore directed to the use of penetrating vehicles which might carry an effective fungicide to the base of the hair follicle and make possible the cure of scalp ringworm by simple inunction or even by painting the scalp without preliminary epilation. In recent years this problem has received considerable attention in America. Herrmann, Sulzberger and Baer (1944) and MacKee, Sulzberger, Herrmann, and Baer (1945) have reported on the use of vehicles containing wetting agents to promote skin penetration. MacKee, Herrmann, and Karp (1946) found that the most promising results in the treatment of tinea capitis were obtained with a preparation containing cetyltrimethylammonium pentachlorphenate 3.5% in "intraderm." The latter consists of a combination of sodium alkylbenzene sulphonate 5%, phenazone 12.5%, propylene glycol 10%, sulphonated castor oil 10%, and distilled water. The *p*H was adjusted to 4 by the addition of citric and propionic acids. In addition to the application of the solution the treatment included the use of an acid shampoo containing sodium alkylbenzene sulphonate and sulphonated castor oil. In a series of 59 cases of infection with *M. audouini*, 54% of the children were cured, the average duration of treatment being approximately 14 weeks. More recently Foley and Lee (1947) have reported on the fungicidal action of combinations of cetyltrimethylammonium pentachlorphenate with fatty acids. The combination found to be most active against pathogenic fungi was cetyltrimethylammonium pentachlorphenate and undecylenic acid.

Fungicidal Agents

In the preliminary experiments of our series phenylmercuric nitrate and salicylanilide have been used as the fungicidal agents. Phenylmercuric nitrate was investigated clinically in 1933 by Levine, who reported favourably on its use in aqueous ointment bases for the treatment of epidermophytosis and tinea. It possesses low toxicity, and

in addition to its fungicidal properties has marked bacteriostatic and bactericidal actions. Byrne (1947) reviewed its application to diseases of the skin.

An attempt was made to incorporate phenylmercuric nitrate into the intraderm vehicle of Herrmann *et al.*, using alkylnaphthalene sulphonate in place of alkylbenzene sulphonate, since the latter substance was not available in this country. Phenylmercuric nitrate, however, was found to be incompatible with alkylnaphthalene sulphonate and with other wetting agents containing the sulphonic group.

A search was made for alternative wetting agents compatible with phenylmercuric nitrate. The Crill series of wetting agents* are non-ionic in character and consist of long-chain fatty-acid derivatives of various carbohydrates, such as sorbitan and mannitan. The series comprises 30 members in all, and Crill No. 6 was chosen for the present purpose as it produces the greatest reduction of surface tension in the range. Crill No. 6 is an ethylene oxide derivative of sorbitan monolaurate and is a pale-straw-coloured viscous liquid having a faint odour reminiscent of linseed oil. It is miscible with water and with vegetable and mineral oils. The solubility of phenylmercuric nitrate in water is increased by the presence of Crill No. 6, with which it is compatible.

Various combinations of Crill No. 6, propylene glycol, and water were prepared, the *p*H being adjusted to between 4 and 5 by the addition of a solution of citric acid (2%) and sodium propionate (1%).

Solution No. 1

Phenylmercuric nitrate	1 g.
Crill No. 6	100 ml.
Propylene glycol	100 ml.
Solution of citric acid and sodium propionate	20 ml.
Distilled water	to 1,000 ml.

Dissolve the phenylmercuric nitrate in a mixture of Crill No. 6, propylene glycol, and 100 ml. of distilled water. Add the solution of citric acid and sodium propionate and adjust the volume by the addition of distilled water.

This solution deposited slightly on standing for 14 days, owing to the presence of propylene glycol. It was therefore decided to replace the propylene glycol by phenoxetol, the antibacterial properties of which have been reported by Berry *et al.* (1944) and which also has a powerful fungicidal action. Phenoxetol is only sparingly soluble in water, and therefore it was necessary to increase the concentration of Crill No. 6 in order to obtain complete miscibility. The concentration of phenylmercuric nitrate was also increased.

Solution No. 2

Phenylmercuric nitrate	2 g.
Phenoxetol	200 ml.
Crill No. 6	400 ml.
Solution of citric acid and sodium propionate	20 ml.
Distilled water	to 1,000 ml.

In order to obtain a preparation easier to apply, a cream was made according to the following formula:

Cream No. 1

Phenylmercuric nitrate	2 g.
Phenoxetol	200 ml.
Crill No. 6	200 ml.
Solution of citric acid and sodium propionate	20 ml.
Lanette wax SX	100 g.
Distilled water	to 1,000 ml.

Heat together, over a water-bath, the phenoxetol, Crill No. 6, and lanette wax SX until the latter is melted. Dissolve the phenylmercuric nitrate in the mixture. Add the solution of citric acid and sodium propionate to the distilled water, heat over a water-bath and add gradually with constant stirring to the mixture of lanette wax SX and other ingredients. Stir until cool.

*Marketed by Croda, Ltd., London.

The concentration of phenylmercuric nitrate was subsequently increased to 0.5%:

Cream No. 2

Phenylmercuric nitrate	5 g.
Phenoxetol	200 ml.
Crill No. 6	200 ml.
Solution of citric acid and sodium propionate	20 ml.
Lanette wax SX	100 g.
Distilled water	to 1,000 ml.

Another type of ointment base used in America consists of polyethylene glycol, the dermatological applications of which have been described by Hopkins (1946). This substance* is available in various grades, the lower members being liquids and the higher members having consistencies varying from that of soft paraffin to hard waxes. "Carbowax '1500'" is a member of the polyethylene glycol series, and is similar in consistency and appearance to white soft paraffin. It is soluble in water but immiscible with mineral and vegetable oils and fats. Carbowax "1500" will itself dissolve many organic compounds, and by the addition of Crill No. 6 its solvent powers may be increased.

Phenylmercuric Nitrate

In these experiments the preparation giving the best results consists of phenylmercuric nitrate 0.5% in a base composed of carbowax "1500" and Crill No. 6, the *p*H being adjusted to between 4 and 5 by the addition of a solution of citric acid and sodium propionate. Unfortunately we have no experimental evidence of the penetrating properties of the carbowax compounds or of the effect of adding wetting agents to ointment bases of this type, but this is a matter which we have under investigation.

Ointment No. 1

Phenylmercuric nitrate	5 g.
Crill No. 6	100 ml.
Solution of citric acid and sodium propionate	20 ml.
Carbowax "1500"	to 1,000 g.

Melt together the carbowax "1500" and Crill No. 6 over a water-bath; add the phenylmercuric nitrate, previously triturated with the solution of citric acid and sodium propionate, and continue heating until the phenylmercuric nitrate is completely dissolved. Allow to cool.

Salicylanilide

Salicylanilide is another fungicide which has received attention in America; in this series it has been used in order to assess its value against that of phenylmercuric nitrate. Of 17 preparations tested by Schwartz (1946) the most efficacious was an ointment containing 5% salicylanilide and 5% hyamine in carbowax "1500." In the present series an ointment containing 5% salicylanilide in the carbowax "1500"–Crill No. 6 base is under investigation.

J. L. Miller *et al.* (1946) reviewed the use of various fungicides in special vehicles, including carbowax, using sodium tetradecyl sulphate as a wetting agent. Daily manual epilation of the diseased hairs was part of their technique.

Ointment No. 2

Salicylanilide	50 g.
Crill No. 6	100 ml.
Solution of citric acid and sodium propionate	20 ml.
Carbowax "1500"	to 1,000 g.

Heat together the carbowax "1500" and the Crill No. 6 over a water-bath, dissolve the salicylanilide in the mixture, and add the solution of citric acid and sodium propionate. Stir and allow to cool.

These preparations, as made and described by Mr. Hadgraft, chief pharmacist to the Royal Free Hospital,

*The "carbowax" compounds are marketed in this country by General Metallurgical and Chemical, Ltd.

were submitted to clinical trial, and the modifications were introduced in attempts to achieve more rapid progress. We are far from being satisfied that the present ointments represent the goal we are seeking, for we think that too much still depends upon an exacting technique of application. Moreover, in spite of the observations of others to the contrary (MacKee, Herrmann, and Karp, 1946), we find that inflammatory reactions in the follicles, if not essential, certainly are of value in accelerating cure. This has been generally accepted in the past with older methods, but it is still hoped that with more powerful fungicides and bases of greater penetrative power it may soon be possible to cure non-inflammatory ringworm of the scalp without provoking reactions in the skin and its follicles.

Clinical Results

The following is the preliminary report on 22 cases of ringworm of the scalp treated with Ointment No. 1 at St. John's Hospital for Diseases of the Skin. There were 13 boys, 8 girls, and 1 woman. All were treated as out-patients. Every patient was examined microscopically and inspected under Wood's light, and the fungus was identified by culture. There were 8 cases of *M. audouini*, 9 cases of *M. felineum*, 4 cases of microsporia, and 1 case of *Trichophyton endothrix* which could not be identified. The parents were given written and verbal instructions. The following routine was carried out:

The hair was cut short and kept short throughout the treatment; a linen cap was worn for 24 hours continuously; every morning the scalp was washed with soap and hot water and scrubbed with a nailbrush, particular attention being paid to the infected patches. The ointment was applied three times a day with a toothbrush for five minutes.

It was thought that by using a fungicide of high potency in a penetrating base, combined with mechanical irritation aimed at producing active hyperaemia and mechanical epilation, favourable results might be obtained. Phenylmercuric nitrate is a fungicide of high potency. Carbowax combines penetrating properties with pleasantness of application, thanks to its quality of mixing easily with water. The nailbrush, applied with gentle vigour to the affected parts, should help to dislodge the infected hair, which when caught by the coarse bristles should be easily removed from the follicles. This has proved to be correct. The toothbrush is a comfortable applicator, and the friction is another factor in producing irritation. We still consider epilation to be a useful preliminary measure in facilitating penetration within the follicles. *X*-ray epilation itself does not cure ringworm of the scalp: treatment with fungicides must follow to complete the cure. Pustulation and kerion formation cause natural epilation. That is one reason why many cases of animal ringworm are easily cured by local applications alone. The inflammatory response, which occurs much more often in the animal than in the human type of ringworm, also plays an important part in natural cure. It is that entire lack of any local reaction which accounts for the difficulty of eradicating *M. audouini* infection by local means only.

The clinical appearance of all cases at the beginning of treatment varied between slight scaliness and severe pustulation of the patches. Co-operation of the parents was the first condition of successful treatment. Some mothers refused to cut their children's hair and some were unwilling from the very start to treat their children, and preferred the established *x*-ray technique. The children reacted very well to treatment, the range of reaction being that of slight erythema and scaling to more or less severe pustulation. Details are given in the Table. Some cases did not show reaction at all and it was thought that painting with pure phenol once or twice would induce pustulation, but after attempting it in three or four cases it was abandoned as unnecessary. One case reacted too violently and the mother refused further treatment; incidentally, that case when seen several weeks later was negative to Wood's light. In one case the Kromayer lamp was employed several times, but without appreciable benefit.

Summarizing, the inflammatory action when already present was welcomed, and in cases where it was absent it was intentionally provoked. Patients were at first seen every week; but later, with mounting experience, they were asked to visit the clinic every three weeks. Improvement could usually be seen between the first and seventh weeks of treatment, this showing itself by thinning of the fluorescent patches and a change in the colour of the infected hair from bright green to white. In our experience when a case became negative it remained so, therefore after the first negative reaction to Wood's light the treatment was continued for only one week and was then stopped. After three negative fluorescent tests the patient was discharged.

It was not always possible to get every patient for three-monthly tests, so that a few cases were followed up for one month only. The Table gives a detailed account of the course of treatment of the 22 cases.

(*a*) *Cases of M. audouini.*—There were 6 boys and 2 girls in this group. Six cases were cured and two failed. The

Analysis of Cases

Case No.	Sex	Age (Years)	Mic.	Wood's Light	Culture	Improved in Weeks	First Negative W.L. Weeks	Total Time of Treatment Days	Reaction	Cured	Follow-up (Mths.)	Remarks
1	M	6	+	+	A	3	2	42	+	+	2	
2	M	3	+	+	A	4	4	64	+	+	3	
3	M	9	+	+	?A	8	4	92	++	+	1	
4	F	4½	+	+	?A	3	2	34	−	+	2	
5	F	3	+	+	A	5	2	49	++	+	2	} Brother and sister
6	M	4½	+	+	A	5	2	49	++	+	2	
7	M	7	+	+	A	−	−	78	−	−		Cured by *x* rays in 1 month
8	M	1½	+	+	A	−	−	120	−	−		Cured by *x* rays in 4 months
9	M	½	+	+	B	4	4	90	−	+	3	
10	M	1	+	+	B	Became negative suddenly		99	++	+	4	
11	M	8	+	+	B	3	6	84	+++			Refused further treatment owing to irritation
12	F	3	+	+	B	4	2	63		+		Not followed up
13	F	5	+	+	B	6	4	120	+	+	4	Kromayer; phenol
14	M	2	+	+	B	4	3	57	−	+	3	
15	M	4	+	+	B	1	1	14	−	+	1	
16	M	7	+	+	B	−	−	63	−			Neglected case, cured by *x* rays in 4 weeks
17	F	35	+	+	B	−	−	300		+		
18	F	6½	+	+	O	2	3	41	++	+	3	
19	M	9	+	+	O	1	2	23		+	2	
20	F	6	+	+	O	−	−	120				Cured by *x* rays in 5 weeks
21	F	1¼	+	+	O	−	−	90				Cured by *x* rays in 4 weeks
22	F	9	+	− (T. end.)	O	7	2	53	+	+	2	

A = *M. audouini.* B = *M. felineum*

number of days of treatment of the cured cases was 330, the average time for each case being 55 days. Improvement began between the third and eighth weeks of treatment, and once the improvement started it took from two to four weeks for the cases to become negative. There was no relapse. The time of observation was from one to four months. Pustulation occurred in three cases, slight reaction in two, and no reaction in one. In Case 7 the nailbrush was not used. Cases 7 and 8, which failed, were cured by *x* rays in one and four months respectively. It is interesting to note that Case 8, which was treated locally for 120 days, took exactly the same time for cure after *x*-ray epilation. It was necessary to carry out several local manual epilations combined with antiseptics to effect a cure.

(*b*) *Cases of M. felineum.*—There were 6 boys, 2 girls, and 1 woman. Eight cases were cured and one failed. The average time of cure was 75 days, excluding Case 17. Improvement began between the first and sixth weeks of treatment. It took one to six weeks for the cases to become negative once the improvement started. The time of observation varied from one to four months. Case 11 showed severe pustulation and refused further treatment. When examined several weeks later this patient was found to be negative to Wood's light; we considered, therefore, that he was cured.

It is interesting to note that there was a difference of about three weeks in the time of cure between the human and the animal types of ringworm. Variation in the resistance of the individual fungus, and last, but not least, the co-operation of the mother, might be responsible for variations in therapeutic response. Case 17 (*M. felineum*) started treatment in November, 1946, and was discharged cured in September, 1947. It was impossible to persuade this patient to cut her hair, and the treatment, therefore, was technically very difficult. It was confined to the inunction of ointments into the affected area. Different kinds of ointments were used for a considerable time, but when Ointment No. 1, combined with mechanical epilation, was employed she was cured in six weeks.

(*c*) *Cases 18–21* could not be identified by culture. We cannot therefore make any further comment upon them, except that Cases 20 and 21 were cured by *x*-ray epilation in five and four weeks respectively.

(*d*) *Case 22.*—A 9-year-old girl had suffered from *T. endothrix* infection for seven months. Clinically she presented widespread inflamed patches over the scalp. The Wood's light test was negative. No identification was possible by culture. Endothrix is notoriously resistant to treatment unless epilated by *x* rays. Another patient, who refused *x*-ray epilation, was treated for nine months with local applications unsuccessfully and had to be *x*-rayed eventually. Case 22 is all the more remarkable as it became clinically and microscopically negative after 53 days' treatment, and has remained so for the last two months.

A new series of cases has been started on 5% salicylanilide in carbowax and Crill No. 6, and of 23 under treatment 10 cases of *M. felineum* have been cured after two to nine weeks and are still under observation.

Summary

A preliminary report is given on new advances in the local treatment of ringworm of the scalp, demonstrating that infections due to *M. audouini* can be cured in a reasonable time without previous epilation.

With 0.5% phenylmercuric nitrate in carbowax and Crill No. 6, 22 cases were treated, including 8 of *M. audouini* infection, 9 due to *M. felineum*, 4 due to unidentified microspora, and 1 due to *T. endothrix*.

Seventeen cases were cured in an average time of 2½ months.

In this small series of cases we found no significant differences between the responses to treatment of the human and that of the animal type of ringworm.

Preliminary epilation, even when followed by old-time remedies, still affords the quickest prospect of cure.

We are indebted to Dr. George Miller MacKee and Dr. F. Herrmann for helpful advice and reprints of their articles, and to Mr. R. C. Syms, senior technician in the laboratory at St. John's Hospital, for his assistance with the mycology.

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PREVENTION OF RINGWORM IN THE TROPICS

BY

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Ringworm is a far greater problem in the Tropics than in temperate climates, and for the British Army in the Netherlands East Indies (N.E.I.) in 1946 it was at one stage the commonest cause, apart from venereal disease, for admission to hospital. In February and March, 1946, ringworm accounted for 19.2% and 21.2%, respectively, of all admissions to a military hospital in Batavia receiving all types of cases except venereal disease. To these must be added the far greater number of cases treated by unit M.O.s, some having up to 50% of their men affected. These figures give a fair picture of the epidemic proportions which ringworm reached in this area. Furthermore, from discussions with colleagues in other parts of the East, I realized that these numbers were typical rather than exceptional for the Tropics.

To reduce this incidence was a military necessity of considerable urgency, in view of the fact that the N.E.I. was an active theatre of operations at the time. This paper describes a successful experiment carried out with 400 British other ranks (B.O.R.s) to test the efficacy of certain preventive measures which were later adopted on a much larger scale, and which may have a wider application to civil life as described later.

In temperate climates ringworm is largely confined to the feet, and from these it spreads to certain selective areas, notably the groins, axillae, and, in women, the submammary regions. In the Tropics, however, it is much more widespread because of the profuse sweating, and although these selective areas are usually the first and more severely affected the whole of the skin may rapidly become involved. In this way a man might have two or three lesions one morning and within a few hours his body, including the face, might be covered with confluent ring-like figures consisting of vesicles and pustules round the edge of an erythematous area, which in the more severe cases would be moist or even weeping. The effect of this was to produce intense irritation; the body became covered with scratch marks, and the man no longer efficient as a front-line soldier. An associated and usually severe tinea interdigitalis, consisting of the typical white sodden skin between the toes, sometimes fissured and sometimes partially detached, occurred in 98% of the cases.

Mode of Spread

Most writers on ringworm emphasize the frequency of spread to the body from lesions between the toes; for example, Brain (1941) writes: "Tinea pedis is usually due to the same organism as tinea cruris and, indeed, is often the source of the groin infection, so that examination of the feet in all cases of ringworm is important." Experience in N.E.I. bears out this frequent mode of spread in tropical climates. Further, although some of the patients had failed to notice their interdigital lesions, the majority stated that they had had them for some time before the ringworm on their body.

It must be pointed out, however, that the diagnosis of these cases was essentially on clinical grounds only, since the conditions of active service at that time precluded any cultural or large-scale microscopical surveys. Only four cases, picked at random, were examined microscopically, and in all of these the characteristic mycelium of ringworm was observed.

Some writers, notably Linn and Magarey (1941) working in Australia, have commented on the relative infrequency with which the fungus from lesions between the toes is obtained, and obviously no direct answer can be given to this from the present experiment owing to the impossibility of carrying out the necessary investigations. However, the experimental method described here was based on the assumption that the lesions between the toes were due to a fungus infection, and the success of the experiment would appear to bear this out, at any rate in the Tropics.

The commonest method of spread between patients is undoubtedly via the feet, and in particular from bathroom floors. This is emphasized by Gray (1934), who quotes: "Legge *et al.* (1929), examining the feet of 3,100 entrants to the University of California in one session, found 53.3% of the men and 15.3% of the women had foot ringworm. At the end of a year they again examined 1,000 of these men and 997 of the women who had access to the showers, swimming-pools, and gymnasiums. Of these, 78.6% of the men and 17.3% of the women were found infected. The increase in the case of the men is striking. The authors point out that the women students occupied a gymnasium with every known sanitary device. The women students and attendants were obliged to wear rubber shoes, and in no circumstances were they permitted to walk with bare feet on the floors or runways leading to the swimming-pools or gymnasiums. On the other hand, the men occupied an antiquated gymnasium where, on account of the lack or non-use of bathing shoes and inferior sanitary facilities, the students constantly walked on their bare feet and became infected." Fraser (1940) emphasized the importance of spread from bathroom floors and the need for careful foot hygiene to prevent it.

In view of these facts I believed that the main feature in a drive against ringworm must be the prevention of the spread of infection from the feet of one soldier to those of another. Consequently it was decided to carry out a large-scale field experiment on an air dispatch company consisting of 400 B.O.R.s. These men were employed on the loading and unloading of aircraft, which in tropical heat, with heavy loads, caused intense sweating: in fact, this unit was chosen because it was one in which working conditions were ideal for the development of severe ringworm, and one in which there was already a high incidence of the disease.

The Experiment

The success of the experiment would largely depend on the men, and therefore at the onset a brief talk was given to them by the unit M.O. and myself; here the rationale of the experiment was explained, and in particular we pointed out that what the men called "foot-rot" was due to ringworm, and this could largely be prevented by frequent and thorough washing and drying between the toes. During the three months of the experiment each soldier was inspected once a week.

Equipment

Underpants.—Two pairs of cotton underpants were issued to each man, and these were washed on alternate days so that a clean one was available for wear each morning.

Foot-towels.—Each man was given two foot-towels, which were washed and changed daily. These were only used for drying the feet in order to prevent the spread of ringworm to the body from lesions between the toes.

Clogs.—Each man was provided with one pair of roughly made wooden clogs consisting of a shaped board with a single canvas strap. As showers were provided and not baths this made it possible to wash the toes without having to take off the clog, thus keeping the feet off the ground. Consequently the feet were never brought into contact with the bathroom floor, and this most important method of transference of infection was eradicated. As a corollary to this the men were instructed not to walk barefooted around the buildings.

Foot Powder.—This was kept in the bathroom, and the men were instructed to apply a little between the toes after drying.

Treatment

No attempt was made to segregate infected from non-infected men, and in fact this would have been almost impossible in the circumstances under which the men were living and working. It was also felt that the success achieved without this measure would add weight to the argument that the spread of infection was largely via the feet, since this was the one mode of spread which was being controlled. The routine treatment was of necessity modified in some cases, but the majority responded to the following measures.

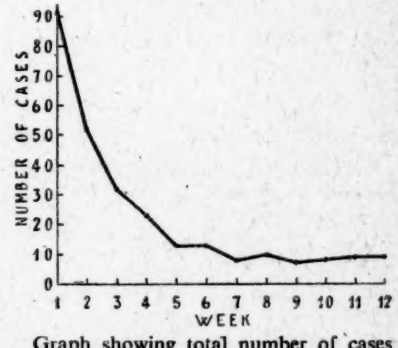
Lesions on the Body.—1% chrysarobin in Lassar's paste was applied. It was never found necessary to increase the percentage of chrysarobin, so severe reactions to it seldom occurred.

Lesions on the Face.—Whitfield's ointment was used in place of chrysarobin, owing to the danger of conjunctivitis with the latter.

Lesions Between the Toes.—Brilliant green 1 in 500 in spirit, with 3% salicylic acid, was applied.

Results

June 1, 1946, was the starting date for the experiment, and on the previous day all the men were examined. Since up till then no record had been kept of the ringworm cases the figures given for May are the numbers of cases found on this inspection. Results are given for the three months June to August, further recording being impossible owing to the evacuation of troops from N.E.I. The accompanying Graph is self-explanatory. The first part of the Table shows the drop in the average length of time taken for cure and bears out the clinical fact noted that cases occurring at the end of the three months were much less severe and less extensive than the early ones. The second part of the Table gives an analysis of the site of the lesions, and shows the rarity of ringworm of the body without an associated tinea interdigitalis, since only two cases occurred and both were present on the original inspection. The fall in the numbers of cases affecting body and toes will be seen



Graph showing total number of cases under treatment for each week of the experiment.

to be much more dramatic than the more steady fall in the number of cases affecting the toes only. This is explained on the theory, already outlined, that the earliest lesions are almost always between the toes, and that during the experiment the spread from toes to body was largely prevented by early treatment and the use of foot-towels.

Month	Average Time Taken for Cure	Distribution of Lesions in New Cases			
		Feet and Body	Feet Only	Body Only	Total
May	—	41	48	2	91
June	14·75 days	2	21	0	23
July	8·5 „	2	18	0	20
August ..	7·75 „	3	10	0	13

Relapse Rate.—There were no relapses in June, but five occurred in July and five in August—eight of these were cases of tinea interdigitalis only. However, in order to give a fair picture of the total ringworm state of the unit these have been included under new cases.

Discussion

It is emphasized that this experiment was carried out without alteration in the normal working routine of a very active unit, and in fact, because of the essential operative work on which the men were employed, it was very often necessary for a man with ringworm to miss one of his daily treatments. Therefore it is practicable not only for an active unit but also for immediate application in the wider field of civil life. Outbreaks of ringworm, particularly tinea interdigitalis and tinea cruris, are liable to occur in any civil community where communal washing facilities are provided, and especially in schools, factories, and mines.

Summary

A description is given of a successful experiment designed to reduce the high incidence of ringworm among troops in the Tropics. The importance of the spread of the disease via floors, from lesions between the toes (tinea interdigitalis), is emphasized, and this is made the basis of the preventive measures adopted. The application of these findings to civil life is noted.

The success of the experiment was largely due to Captain John Middleton, R.A.M.C., regimental medical officer to the unit concerned, to whom I am most indebted. I would like to thank the Director-General, Army Medical Services, for permission to publish, and Lieutenant-Colonel C. F. Michell, R.A.M.C., adviser in dermatology to the War Office, for his encouragement and assistance.

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"The School Dental Service has substantially recovered from the wartime relapse due to the calling up of dental officers, but we still have a long way to go to make it truly comprehensive and efficient," said Mr. George Tomlinson, Minister of Education, speaking in London on April 3 at the annual dinner of the Dental Officers Group of the Society of Medical Officers of Health. Stating that the average interval between periodic inspections was still a good deal more than twelve months and needed to be reduced, Mr. Tomlinson said that nearly 70% of the children in schools had dental inspections in 1946 and that 72% of those found to need treatment were willing to accept it. Almost every local education authority had now appointed a senior dental officer, and it was expected that the few stragglers would soon come into line, but the expansion of the service was hindered, as with other parts of the educational system, by shortage of labour and materials. Much could be done by improvisation, however, and local education authorities were encouraged to provide additional clinics by taking over existing buildings and adapting them cheaply. Emphasis on preventive rather than curative aspects of dentistry was becoming more common. Nutrition was a vital element in this, and the school dental service together with the school milk and meals service and the school medical service formed a great co-operative enterprise designed to foster the physical welfare of the children.

EFFECTS OF SEX AND THYROID HORMONES ON THE PROCESS OF AGEING IN FEMALE RATS

BY

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This paper is a summary of the results of experiments published in detail in four previous papers (Jones and Korenchevsky, 1946; Korenchevsky and Jones, 1946, 1947, 1948), and contains the general conclusions to be drawn from them. The effects of ovariectomy and of androsterone, oestradiol benzoate-butyrate, progesterone, and thyroid hormone, given alone or in various combinations, were investigated on the process of ageing in ovariectomized rats. All these hormones, including the androgenic hormone androsterone, are naturally present in the female organism. The literature relating to some parts of this subject is extensive, and it was reviewed in detail in the previous articles. Therefore, for economy of space, the papers of only a few workers are here referred to. For the same reason our previously published detailed tables are summarized in three abbreviated tables and the illustrations are omitted.

Main Lines and Methods of Gerontological Research

The best definition of old age was given by Prof. Warthin (1930): essentially old age is a major involution of the organism, of all its vital organs and tissues and of all their functions. Surprisingly, this ageing involution starts in most organs very early, at childhood. Therefore gerontological research can be carried out on individuals of any age. Hence there are two chief approaches to gerontology: *research on ageing* in young or adult individuals (as in the present experiments) and *research on actual old age or senility* in old animals or old human beings. It is obvious that both these ways are equally important. For therapeutic purposes of geriatrics the investigation of ageing in the earlier years of life is of great importance, since it might contribute to the problem of prevention of the present premature and abnormal senility.

The ageing involution of at least some organs should first show itself in the decrease in their relative weight—i.e., in the relative hypoplasia of organs (Korenchevsky, 1942). On the other hand, if any factor has some anti-ageing effect on a certain organ, it should increase the weight and produce hypertrophy of that organ. Obviously the changes in weight of organs alone cannot be sufficient for conclusions on hypertrophic, atrophic, or especially on any degenerative changes. For this purpose at least histological examination is necessary in order to eliminate errors in cases of enlargement of the organs due to oedema or hyperaemia, and to discover degenerative changes, etc. However, a complete understanding and an accurate definition of the processes of ageing and of the anti-ageing properties of any factor examined could be obtained only after the performance of several morphological, physiological, and biochemical investigations, both experimental and clinical.

Technique of the Present Experiments

Five experiments were performed on 197 female rats, of which 11 were normal controls, 29 ovariectomized controls, and 157 ovariectomized rats treated with hormones. The

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duration of Experiments I and II was 56 to 76 days, and of Experiments III–V, 43 to 52 days.

Besides these five experiments a re-examination and a recalculation were made from some other earlier experiments in which a total of 54 normal and 325 ovariectomized rats were used in order to study the effects of ovariectomy and oestradiol administration. In different experiments the weights of organs might vary, and those in the experimental groups have to be compared with the weights of the respective control groups of each experiment. All sex hormones in experiments I–IV, and oestradiol benzoate-butyrate in Experiment V, were injected in oily solution. Progesterone and androsterone in Experiment V were injected as a crystalline emulsion suspended in 5% gum acacia. Desiccated thyroid was administered by mouth with a pipette in the form of a sweetened emulsion. Thyroxine was injected subcutaneously.

Each of the hormones investigated, except progesterone, was administered separately or in various combinations with other hormones. Progesterone was always injected with oestradiol B.-B. The following weekly doses were used.

Experiment I.—Desiccated thyroid, 105 mg. ("small dose"); oestradiol B.-B., 0.015 mg. ("small dose"), injected for three weeks only, or 0.09 mg. ("large dose"), injected every week; androsterone 4.5 mg.

Experiment II.—Desiccated thyroid, 250 mg., + thyroxine, 0.8 mg. ("large dose"); oestradiol B.-B., 0.015 mg., injected for the first three weeks and two last weeks ("medium dose"). The doses of oestradiol B.-B. ("large dose") and androsterone were the same as in Experiment I.

Experiments III and IV.—Desiccated thyroid, 65 mg., three times a week; oestradiol B.-B., 0.028 mg., during first week only; progesterone, 2 mg., daily during last 19 days.

Experiment V.—Desiccated thyroid, 60 mg., three times a week; oestradiol B.-B., 0.015 mg., injected three times during first week only; crystalline suspensions of androsterone, 10 mg., and progesterone, 10 mg., injected every 8th or 10th day.

The following methods of investigation were used: weighing of the organs and body fat (as indicated by weight of the abdominal fat); examination of the size of the cells by outlining them on paper and weighing the paper replicas obtained; measurement of the nuclei; count of mitoses; usual histological examination of the sections stained with haematoxylin and eosin, and, for lipoids, with sudan black. All organs were weighed after fixation in Bouin's solution, except brain and hypophysis, which were fixed in 4% formol-saline. The relative weights have been calculated per unit of "fat-free" body weights for reasons explained below.

All details of the methods used were given in the previous papers (Jones and Korenchevsky, 1946; Korenchevsky and Jones, 1946, 1947, 1948). All results obtained were statistically analysed by means of Fisher's t-test for small samples. For the greater part of the statistical analyses I am indebted to Mr. B. Benjamin, the head of the L.C.C. Statistical Bureau, and for the other part to my co-worker, Miss V. E. Jones.

Ageing Hypoplasia of Organs

When the relative weights of organs in our normal intact female rats were calculated in the usual way—i.e., without subtraction of body fat—a progressive decrease of these weights was shown with ageing. A confirmation of these results was found in Donaldson's (1924) data and, after their recalculation, in those of Prof. Freudenberger and his co-workers (1935–1939). Neither Donaldson nor Freudenberger *et al.* investigated the amounts of body fat. Such an omission might lead to serious mistakes for two reasons: (1) The size and weight of an organ are determined to a greater or lesser extent by the amount of work which that organ has to perform independently of, or for the maintenance and functioning of, correlated organs and tissues; from this point of view the inert fat tissues cannot be compared with any active tissue—e.g., muscular, glandular, nervous, etc. (2) When compared with a thin animal, the large fat deposition in the body of a fat animal will, when the organs are calculated per unit of body weight, give a fictitious decrease in the organs.

Since we always weighed abdominal fat, using this value, we could roughly calculate the total body fat in our experiments. From the age of about 30 to 50 days to that of about 800 days these "fat-free" weights show a decrease (relative hypoplasia of organs) in thyroid, thymus, liver, kidneys, spleen, and brain. This decrease, however, was less pronounced than in the Donaldson–Freudenberger data, and in some organs (ovaries, adrenals, hypophysis) was developing from the age of sexual maturity only, or sometimes (heart) even later.

Effects of Ovariectomy (Artificial Climacteric).—Ovarian hypoplasia and hypofunction are the foremost factors in producing the climacteric in the senescent female organism. Therefore from an experimental point of view the condition produced in the young or adult female organism by ovariectomy might be considered as an artificial, premature, and extreme "climacteric" of purely gonadal origin. Thus the investigations of the changes produced by ovariectomy might explain several features in the climacterical symptom-complex. Comparing the age at which it appears and the rate of its development, the relative decrease of organs in our experiments was more pronounced in ovariectomized rats than in the normal controls. So far this has been confirmed histologically in the case of sex organs, liver, kidneys, and thyroid. The interpretation of the changes in adrenals is more difficult. Thus, as judged by the rate of involution of organs, ovariectomy accelerates the process of ageing.

Effects of Hormones on Ovariectomized ("Climacterical") Rats.—Tabulated detailed data and photomicrographs were given in the previous papers. The chief aim here is to demonstrate those non-sex organs in which the changes obtained were definite and statistically significant. Some new unpublished data are included in the tables. In order to show that the effects of hormones are evident both in actual and in relative weights, Table I contains the actual weight of organs, while Tables II and III contain the relative weights per 200 g. of "fat-free" body weight. So far histological examination has been made of uterus, vagina, adrenals, thyroid, liver, and kidneys.

TABLE I.—*Effect of Androgenic, Oestrogenic, and Thyroid Hormones, Administered Separately or Simultaneously, on Actual Weight of Organs in Experiment II*

Organs	Ovariectomized Controls	Thyroid Hormone (Large Dose)	Oestradiol B.-B. (Medium Dose)		Androsterone		
			Alone	+ Thyroid Hormone (Large Dose)	Alone	+ Thyroid Hormone	+ Thyroid Hormone + Oestradiol B.-B.
Adrenals (mg.)	55	86	84	135	42	70	123
Hypophysis (mg.)	15·4	14·2	19·8	19·8	15·2	14·7	18·7
Liver (g.) ..	6·79	9·17	8·01	11·55	8·78	9·99	10·37
Kidneys (g.) ..	1·44	2·12	1·60	2·54	1·65	2·18	2·60
Heart (mg.) ..	768	1,123	813	1,200	893	1,162	1,110

Effects of Thyroid Hormone.—This hormone has both stimulating and depressing properties. The stimulation was definitely demonstrated with a suitable dose in hypertrophy of adrenals, liver, kidneys, heart, and spleen (Table I), and in the histological changes obtained. These results are in close agreement with those of previous workers, as was shown in our review of the literature on the subject (Korenchevsky and Jones, 1946, p. 327). Depressing effects have been observed in a decreased function of *thyroid gland*, a smaller gain in *body*

weight, and decreased *fat deposition*. These changes obtained in ovariectomized rats are in complete agreement with those found in the previous experiments on normal rats (Korenchevsky, Hall, and Clapham, 1943; Korenchevsky and Hall, 1944). *Uterus and vagina* remained atrophic, but their epithelium and the muscular cells were slightly better developed than those in control ovariectomized animals.

Effects of Androsterone.—The stimulating effects of androsterone are shown (Tables I and III) in increased weight of vagina, liver, kidneys, heart, and in slightly better gain in body weight and fat deposition. Histologically the following changes

TABLE II.—*Return of "Fat-free" Relative Weights of Organs Towards or Up To the Level Present at Earlier Age After Simultaneous Administration of Oestradiol B.-B., Androsterone, and a Large Dose of Thyroid Hormone in Experiment II*

Organs	Normal Intact Control Rats		Ovariectomized Rats Aged 152 Days	
	Aged 65 Days	Aged 152 Days	Controls	Treated with Three Hormones
Adrenals (mg.) ..	79	68	51	111
Thyroid (mg.) ..	20·9	16·7	13·0	15·3
Liver (g.) ..	9·8	7·7	6·3	9·5
Kidneys (g.) ..	1·8	1·7	1·3	2·3
Heart (mg.) ..	786	871	714	1,000

were found: slightly better development of still atrophic uterine epithelium, and better development of all vaginal layers; larger liver cells and a greater number of large nuclei; larger renal tubules with enlarged lumens; in thyroid—a definitely more active columnar epithelium, with less colloid in follicles (i.e., a stimulation of the gland). Androsterone, however, had a definitely depressing effect on adrenals, as shown by their small weight and the smaller size of their cells and nuclei; their lipoid content was also decreased. The involution of thymus was accelerated, as is the case with all male sex hormones.

Effects of Oestradiol Benzoate-Butyrate.—Oestradiol B.-B. (Table I) exerts varying effects, depending on the dose administered. Since it usually depresses growth and gain in body weight, the examination of the relative weights of organs be-

TABLE III.—*Return of "Fat-free" Relative Weights of Organs Towards or Up To the Level Present at an Earlier Age after Administration of Progesterone, Oestradiol B.-B., Androsterone, and a Small Dose of Thyroid Hormone in Experiment V*

	Ovariectomized Rats, aged 175 Days					Normal Intact Controls aged 52 Days
	Controls	Androsterone	Thyroid Desicc. (Small Dose)	Progesterone		
				+ Oestradiol B.-B.	+ Oestradiol B.-B. + Androsterone + Thyroid Desicc.	
Abdominal fat (g.) ..	11·0	13·6	7·1	12·6	10·2	1·7
Adrenals (mg.) ..	44	34	59	59	62	57
Liver (g.)	6·08	7·50	6·80	8·21	7·79	10·43
Kidneys (g.)	1·15	1·44	1·56	1·42	1·69	1·96
Spleen (mg.)	842	768	984	809	1,000	1,634
Heart (mg.)	670	730	905	777	831	1,009

comes especially important. The best results were produced by medium doses, which, besides the well-known hypertrophic effect on the uterus and vagina, increased the relative weights of the adrenals, hypophysis, liver, kidneys, and, in some experiments, of the heart. Small doses might have no effect, while comparatively large doses produce a less stimulating and more toxic action. Among the toxic effects, the metaplastic changes of the uterine epithelium and glands, the development of adenoma-like structure in thymus (Ross and Korenchevsky, 1941; Plagge, 1946), and the tumour-like enlargement of the hypophysis are very important. Histologically, non-toxic doses produced in adrenals enlargement of the cortex, enlargement of the fasciculata cells, and an increase in number of large nuclei. While small and medium doses usually do not change the structure of adrenals, except for the above-mentioned hypertrophic features, the larger doses produced atrophy and degenerative changes in the reticularis cells, with a considerable hyperaemia of this zone and a lipoid depletion in the zona glomerulosa. With non-toxic doses the cells became enlarged in liver and kidneys, in some experiments significantly; likewise their nuclei. With the doses of oestradiol used no definite changes were found in thyroid structure.

Simultaneous Administration of Thyroid Hormone with Oestradiol B.-B.—This association of hormones produced a stimulating hypertrophic action on some organs which was more pronounced than with either hormone alone. This was shown in the weight of the adrenals, liver, and kidneys (Table I), and histologically in the cortex of the adrenals and, in some cases, in the liver and kidney cells.

Simultaneous Administration of Androsterone with Oestradiol or with Thyroid Hormone.—With both these combinations the two latter hormones had an important neutralizing effect on the depressing, harmful action of androsterone on the adrenals. This was shown both in weight of adrenals (Table I) and the return of their histological structure towards or up to normal. On the other hand, a neutralizing effect of androsterone was evidenced histologically by some decrease of the thyroid depression produced by small doses of thyroid hormone. The changes brought about in the thyroid by large doses of thyroid hormone were resistant to this action of androsterone. Other organs showed chiefly the effects of thyroid hormone, the latter overcoming the effects of androsterone.

Simultaneous Administration of Three Hormones—Androsterone, Oestradiol B.-B., and Thyroid Hormone.—This combination produced (Tables I and II) effects similar to those of thyroid hormone + oestradiol, and androsterone + thyroid hormone. The neutralizing action on pathological changes in the adrenals and thyroid gland was also present. Histologically the adrenals had a structure similar to that in normal rats (except for the large size of the gland and their cells). Metaplasia of the uterine epithelium and glands was still present, but otherwise, with this combination of hormones, the structure of both uterus and vagina was closest to that in normal rats.

Insufficiency of the Three Hormones Used in Obtaining Normal Anti-involutionary Effects.—Some of the toxic or pathological effects observed with the combinations of the hormones used could not be prevented by any one of them. It is known, however, that the metaplasia of uterine epithelium produced by oestrogens, or the adenoma-like transformation of uterine glands produced by a combination of oestrogens with androgens (Korenchevsky and Hall, 1938, 1940), or the development of abdominal fibroid tumours after treatment with oestrogens (Lipschütz and Schwarz, 1944; Lipschütz *et al.*, 1944) could be prevented by progesterone. Therefore it was decided to administer progesterone in various combinations with the three hormones already investigated.

Progesterone in Combination with Oestradiol B.-B.—This combination had a definite stimulating action on the thyroid, adrenal cortex, kidneys, and liver (Table III), producing hypertrophy of their cells. Liver and adrenals and, in one experiment, kidneys and heart had significantly greater weights. Involution of thymus was accelerated, and all pathological changes in the uterine epithelium and glands were prevented. *When three or four hormones*—progesterone, oestradiol B.-B., and thyroid hormone, with or without androsterone (Table III)—were administered *simultaneously* the pathological changes in uterine epithelium were also prevented; the depressing action of androsterone on adrenals was neutralized, as was to a certain extent the depressing effect of thyroid hormone on the thyroid gland; the cells and their nuclei in the fasciculata zone of adrenals, in liver, and in kidneys were hypertrophied. Histologically, the progestational changes were found in uterus and vagina, being intensified in uterus with an androsterone-containing combination.

Discussion

It was well established by previous workers that in an ageing organism it is possible to return the secondary sex organs towards or up to normal size and weight by administration of sex hormones. In the present experiments the combined administration of sex and thyroid hormones produced a similar return towards or to normal weight in such

vital organs as adrenals, thyroid, liver, kidneys, spleen, and heart. Moreover, as the data in Tables II and III demonstrate, by such treatment it is possible to bring back involuted adrenals, liver, kidneys, and heart towards or to their relative weight present at the earlier age. It is necessary, however, to mention that these results were obtained in ovariectomized animals. The results of similar experiments on intact normal animals are under examination, and probably will reveal some important differences.

As shown in the present experiments, when examining the useful action of any factor on the process of ageing it is dangerous not to take into consideration the harmful effects which are present simultaneously with the useful ones. The harmful effects might become especially dangerous in prolonged treatment or with larger doses, although the favourable effect might be much more striking with larger doses (Tables I and II) than with weaker ones (Table III).

Summary

Experiments were performed in order to study the effects of ovariectomy and of oestradiol benzoate-butyrate, progesterone, androsterone, and thyroid hormone, administered separately or in various combinations, on the process of ageing in ovariectomized rats. Involution of some organs, as shown by changes in their relative weights, was taken as an indication of ageing.

Ovariectomy—i.e., artificial "climacteric"—as judged by relative involution of organs, accelerates the process of ageing in rats.

All the hormones investigated possess two more or less pronounced properties: a stimulating, in most cases hypertrophic, action, and simultaneously in some cases a pathological or depressing effect, on uterus, vagina, preputial glands, thymus, spleen, and such vital organs as adrenals, thyroid, hypophysis, liver, kidneys, and heart, also on fat deposition and body growth. These effects were exerted on all of these organs and functions, or on some of them only.

The stimulation and hypertrophy of the organs and tissues bringing their structure nearest to normal was obtained when all four hormones were administered simultaneously in suitable, not excessive, doses. In this way a co-operation of useful properties and more or less complete neutralization of pathological effects occurred.

Thus simultaneous administration of the hormones may prevent some damaging effects due to hyperhormonization produced by a single hormone. Such hypersecretion of a single hormone is unnatural in the normal organism, in which all hormones are secreted simultaneously in a certain balanced ratio.

The plurihormonal treatment used stopped the ageing involution of some organs in ovariectomized rats, and, moreover, brought the relative weights of these organs towards or up to the level observed at a younger age.

The above-mentioned results, however, do not warrant any definite conclusion whether the hypertrophy developed in some organs by the hormonal treatment should be considered as a kind of artificially produced deformity or else, as it appears to be, as some favourable check to the process of ageing. These results prove only that some processes of ageing can be influenced arbitrarily.

It is necessary to emphasize strongly that before we can define any agent as an anti-ageing factor, especially for therapeutic purposes, more manifold investigation than that of the changes in weight and histological structure of some organs (as in the present experiments) must be made. For this purpose, both experimental and clinical, many-sided and prolonged morphological, biochemical, and physiological experiments are necessary.

It is obvious that a complete picture of the effect of plurihormonal treatment on the process of ageing will be obtained only with the use of a combination of all the main hormones, especially those of the adrenal cortex and hypophysis.

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SERUM IRON IN NORMAL WOMEN

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It was Fontes and Thivolle who first demonstrated that minute amounts of iron circulate in the serum. Since then much work has been done on serum-iron analyses, but not until recent years have the methods in use been sufficiently reliable.

The normal values for serum iron have not yet been fully established. Some authors have reported sex differences in the serum-iron concentration, while others deny their existence. So far, the normal amounts observed vary between 0.035 and 0.22 mg. per 100 ml. Most authors estimate the serum iron to be about 20 γ per 100 ml. lower in women than in men. Altogether about 1,000 determinations have been carried out on 21 "normal" subjects. These cannot be said, however, to be sufficient to elucidate this problem, particularly as the technique employed by the various authors has varied. It is possible, too, that the serum-iron concentration may have changed somewhat (i.e., given slightly pathological values) in individuals who have been looked upon as healthy. For determination of serum-iron values it is essential to be careful in the choice of the "normal" individual, because serum iron is a very labile plasma element, the concentration of which is dependent on many factors—e.g., absorption and excretion of iron, size of the depots, haemoglobin production, breakdown of haemoglobin, etc. In order to be quite sure that "normal" individuals are used it is necessary to ascertain whether the diet of the person concerned has contained a sufficiency of vitamins and minerals with a suitable amount of vegetables and meat. Then all the states of deficiency that influence iron metabolism will have been excluded. In addition, it is necessary to make sure that he has not recently been suffering from an infection or, if so, that recovery is complete; for infections interfere with iron metabolism, as is evident occasionally from the occurrence of infection anaemia.

It seems probable that the greatest variations in serum-iron concentration will be found in women, for the blood lost during menstruation may reasonably be expected to reduce the amount of serum iron. Besides, most women go

through one or more pregnancies, which may be assumed to influence iron metabolism and therefore the serum-iron concentration. Finally, the life of a woman may be divided into three periods, the menarche and the menopause forming the borderlines. All these conditions suggest that the iron metabolism must be far more active in women than in men, as in the latter only pathological conditions may conceivably affect it.

While the normal values for serum iron obtained by individual authors vary to some extent, collectively they give a fairly good idea of where the limits are to be set. Heilmeyer and Plötner (1937), Skouge (1939), Albers (1941), and Dahl (1945) give somewhat lower values than do other authors.

Present Investigation

Among the subjects in the present series in whom the above-mentioned requirements have been met, three showed a serum-iron concentration of only 68 γ per 100 ml. and one of 69 γ. The highest values measured were 194, 166, 154, 146, and 143 γ per 100 ml., while all the others were under 140 γ.

According to these findings it seems not improbable that in women the normal serum iron varies between 70 and 140 γ per 100 ml. If in a woman we meet with a value under 70 γ we are probably dealing with a case of sideropenia; and if the value exceeds 140 γ it is not unreasonable to assume that the case is one of sideraemia (perhaps physiological sideraemia). It is difficult to decide when increased values are pathological, but values over 200 γ per 100 ml. must be regarded as decidedly so.

Technique.—First Poul Wehmeyer and I tried the technique of Bröckner-Mortensen and Carsten Olsten (1940); but later I employed the method of Balle (1942) and Höyer (1943), which has proved to be rapid and very accurate. Briefly, the method is as follows:

Sufficient blood is withdrawn to give 3 ml. of serum. One can manage with 1.5 ml., but then the duplicate analyses can be carried out only on diluted serum, and this makes the error 2 to 4% greater. To 3 ml. of serum, 1.5 ml. of 6/N HCl is added, and the whole shaken; this liberates the serum iron. When the mixture has been standing for 15 minutes, 3 ml. of 20 vol. % trichloracetic acid is added, again shaking; this precipitates the proteins. After standing for a few minutes the mixture is centrifuged at 5,000 revolutions a minute for 30 minutes. To 3 ml. of the clear supernatant fluid 80 c.mm. of concentrated nitric acid is added, and also 0.8 ml. of 5/N potassium thiocyanate solution. The result is read within 10 minutes in a Pulfrich photometer with a 50-mm. microcuvette and filter S53. The control solution consists of iron-free water with the addition of the above-mentioned reagents.

The haemoglobin determination and the red blood count were performed on venous blood immediately after its withdrawal; the blood was obtained from a median vein.

Results

Altogether 112 analyses were performed on blood from healthy women, and the results are recorded in Tables I, II, III, and IV.

TABLE I.—*Serum-iron Determination on 9 Girls before the Menarche. The Average Value is 111 γ per 100 ml.*

Age	Height (cm.)	Weight (kg.)	Hb%	Erythrocytes in Millions	Serum Iron in γ/100 ml.
9	121	22	90	4·72	100
11	146	39	102	5·02	136
12	130	28	99	4·69	102
12	143	36	102	5·11	116
13	145	36	91	4·89	126
14	158	49	86	4·94	97
14	164	51	98	4·33	100
14	151	48	97	4·98	83
15	160	52	88	4·18	136

In nine girls in whom menstruation had not yet started the serum-iron values were between 83 and 136 γ per 100 ml. (Table I). One girl whose first menstruation appeared 19 days before the examination (the first subject in Table II) showed a serum-iron value of 84 γ. In 63 women with normal menstruation the serum-iron concentration varied between 68 and 154 γ per 100 ml. In 16 women in whom the menopause had appeared it varied betewen 76 and 194 γ

TABLE II.—*Serum-iron Concentration in 63 Normal Women between the Menarche and the Climacteric*

Age	Height (cm.)	Weight (kg.)	No. of Days After Last Menses	Hb%	Erythrocytes in Millions	Serum Iron in γ/100 ml.
14	168	70	19	100	4·72	84
15	167	68	6	92	4·61	126
15	158	61	3	91	4·32	86
16	163	57	During	92	4·28	113
16	158	54	14	94	4·76	121
17	170	62	26	88	4·43	146
17	166	70	2	98	4·87	94
17	174	70	18	88	4·43	136
17	164	60	10	86	4·39	84
18	164	60	24	92	4·88	98
19	169	65	24	86	4·18	93
19	166	65	8	89	4·48	106
19	180	72	19	92	4·60	106
20	160	56	9	84	4·00	137
20	166	72	8	88	4·70	130
20	178	72	23	86	4·14	126
20	161	60	12	108	4·90	154
21	166	62	31	106	5·06	139
21	152	52	4	101	4·63	72
21	162	50	15	92	3·98	68
21	160	61	11	98	4·71	94
21	168	68	20	92	4·58	113
21	162	54	23	100	4·68	115
22	177	73	20	100	4·99	80
22	169	63	2	92	4·80	124
22	166	60	2	91	4·61	75
22	165	53	During	90	4·59	75
22	171	65	13	95	4·58	95
22	161	58	1	106	5·03	93
22	164	50	8	88	4·24	94
23	176	76	8	99	4·77	83
23	169	66	3	92	4·10	95
23	168	65	3	94	4·87	82
24	174	68	28	97	4·93	139
24	158	64	14	91	4·75	82
25	175	65	19	94	4·17	100
25	175	63	During	84	4·61	98
26	160	61	30	98	4·86	106
26	173	81	22	89	4·46	143
26	171	69	13	88	4·82	134
28	162	69	23	102	5·00	114
28	169	72	3	101	5·04	93
29	173	69	3	85	4·62	88
29	178	72	25	90	5·04	115
30	170	59	14	88	4·56	118
31	173	81	6	90	4·50	102
31	171	88	9	88	4·66	114
32	165	69	12	92	4·55	120
32	153	54	18	88	4·20	83
32	162	82	18	89	4·56	118
33	170	80	14	98	4·58	83
35	167	68	12	92	4·52	68
35	164	59	2	86	4·33	69
35	166	67	6	86	4·01	68
36	159	64	8	101	4·69	134
36	163	69	10	98	5·40	140
37	159	61	9	90	4·30	136
38	183	89	11	97	4·86	96
39	174	72	20	99	4·60	124
41	169	76	11	89	4·29	113
43	172	78	9	87	4·46	78
44	168	59	16	87	4·28	78
45	168	78	20	103	5·06	97

TABLE III.—*Serum Iron in 16 Normal Women after the Menopause (Average 113 per 100 ml.)*

Age	Height (cm.)	Weight (kg.)	No. of Years After Climacteric	Hb%	Erythrocytes in Millions	Serum Iron in γ/100 ml.
48	158	58	11	99	4·46	126
48	167	60	2	83	4·09	108
48	166	67	3	94	4·63	194
49	170	78	3	96	4·62	132
50	169	81	1	100	4·82	93
51	157	68	3	92	4·78	107
53	162	68	5	98	4·26	76
57	164	74	10	97	4·70	92
58	166	70	3	102	5·04	81
58	162	69	10	102	5·16	103
59	154	59	7	90	4·29	116
60	162	73	8	100	4·98	86
62	167	89	19	100	4·76	138
63	161	59	18	92	4·01	80
64	162	91	20	104	4·86	107
77	156	62	28	87	4·28	166

TABLE IV.—*Parallel Changes in the Haemoglobin Percentage, Erythrocyte Count, and Serum Iron During the Menstrual Cycle of Four Hundred Women*

No. of Days After Last Menses	No. 1			No. 2			No. 3			No. 4		
	Hb%	Erythrocytes in Millions	Serum Iron in γ/100 ml.	Hb%	Erythrocytes in Millions	Serum Iron in γ/100 ml.	Hb%	Erythrocytes in Millions	Serum Iron in γ/100 ml.	Hb%	Erythrocytes in Millions	Serum Iron in γ/100 ml.
During	84	4·61	98	88	4·41	88	82	4·02	80	79	4·00	78
6	85	4·45	78	90	4·50	102	84	4·16	83	82	4·04	86
13	89	4·34	93	87	5·32	93	96	4·46	88	89	4·20	80
20	94	4·28	126	92	4·45	105	94	4·74	102	90	4·38	87
27	89	4·04	155	95	4·51	112	100	4·96	106	90	4·41	94
During	80	3·89	69	92	4·39	96	90	4·29	87	85	4·13	83

TABLE V.—*Serum-iron Values in Relation to the Menstrual Cycle*

Days of Cycle	Serum Iron in γ/100 ml.	Days of Cycle	Serum Iron in γ/100 ml.
During	95·3	16–18	112·3
1– 3	88·3	19–21	100·6
4– 6	98·6	22–24	114·8
7– 9	112·3	25–27	130·5
10–12	108·7	28–30	122·5
13–15	99·2	31–33	139·0

(Table III). The average values for girls and elderly women were 111 and 113 γ per 100 ml. respectively, while the average for menstruating women was 105 γ. This indicates that the serum-iron concentration is somewhat lower in menstruating women than in the non-menstruating.

It has been asserted that this lower value in menstruating women is due to the loss of iron month after month. The work here reported indicates that this theory is correct. In order to obtain further corroboration four perfectly normal women were examined throughout a menstrual cycle (Table IV). The examination showed that the serum iron reached its highest value immediately before the menstruation, while the lowest values were found during and immediately after.

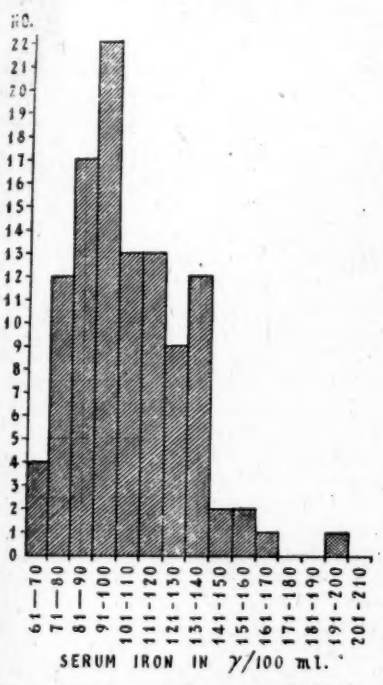

Chart showing amount of serum iron in normal non-pregnant women.

In Table V the 63 serum-iron values obtained in menstruating women (from Table II) are grouped after the menstrual cycle. Here, too, we find higher values shortly before the expected menstruation.

The Chart illustrates the distribution of the serum-iron values obtained in the present series. It shows how the normal limits—70 and 140 γ per 100 ml.—are arrived at.

Summary

Determination of the serum iron has been carried out on 92 healthy females receiving an adequate diet. The five highest values were 194, 166, 154, 146, and 143 γ per 100 ml.; while the three lowest values were 68 γ.

The serum-iron concentration was found to be lower in menstruating women than in those not menstruating.

The theory that the lower serum-iron value in menstruating women was due to loss of iron month after month is considered to be proved by the results obtained.

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REFRACTORY IRON-DEFICIENCY ANAEMIA TREATED WITH INTRAVENOUS SACCHARATED OXIDE OF IRON

BY

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In a recent article by Nissim (1947) the use of saccharated oxide of iron for intravenous injection is described. The following case is reported because the patient responded dramatically to parenteral iron therapy subsequent to the failure of the oral administration of iron in large amounts for long periods, supplemented at various times with ascorbic acid, thyroid extract, molybdenized ferrous sulphate, parenteral liver extract, and folic acid.

Case History

The patient, a woman aged 29, was first admitted to hospital on June 13, 1945, with a three-months history of breathlessness and fatigue. Her appetite and diet had always been satisfactory, she had never suffered from dyspepsia or diarrhoea, her periods were not excessive, and there was no evidence of any other source of blood loss. On examination there was no oedema. The nails, although brittle, were not flattened. Some atrophy of the papillae of the tongue was present. The liver, spleen, and lymphatic glands were not enlarged. Physical examination of the cardiovascular, respiratory, renal, alimentary, and central nervous systems revealed no pathological features. The patient's intelligence was below average.

A test meal showed that free hydrochloric acid was present in the gastric juice. There was no excess of urobilinogen in the urine, and the stool benzidine test was negative. Radiological examination of the alimentary tract revealed no abnormality. The haemoglobin was 30%; erythrocytes, 2,850,000 per c.mm.; colour index, 0.53; white cells, 2,800 per c.mm.; reticulocytes <1%. The sternal marrow contained numerous late normoblasts of the type seen in iron-deficiency anaemia.

There was no response to ferrous sulphate, 3 gr. (0.2 g.) thrice daily for 24 days, followed by 6 gr. (0.4 g.) thrice daily for 20 days. Supplements of ascorbic acid, thyroid extract, and liver extract were given in turn, with no beneficial results. Accord-

ingly she was given a transfusion of 3 pints (1.7 litres) of blood, which raised the haemoglobin level to 68%. She was discharged on Aug. 7, and continued to take ferrous sulphate, 3 gr. three times a day, as an out-patient.

She was readmitted on May 1, 1946, with a haemoglobin level of 51%. Physical examination again revealed no explanation for the anaemia. The possibility existed that the anaemia was dependent on some failure of absorption, although neither clinical nor radiological examination of the alimentary tract had revealed any abnormality. Accordingly a fat-balance test was done, and absorption of fat was found to be normal. A liver biopsy showed no pathological change. Sternal puncture was repeated and a normoblastic marrow again demonstrated, although this time it was somewhat hypoplastic. As no response occurred to continued iron therapy, a further 2 pints (1.14 litres) of blood was given, and this raised the haemoglobin level to 68%. The patient was discharged from hospital on May 14 with instructions to continue taking ferrous sulphate, 6 gr. (0.4 g.) thrice daily.

She was admitted to hospital for the third time on May 5, 1947, with a haemoglobin reading of 38%; erythrocytes, 3,180,000 per c.mm.; colour index, 0.6; white cells, 2,000 per c.mm.; P.C.V., 23%; M.C.V., 72.3 c.μ.; M.C.H.C., 22.8%. A histamine-fast achlorhydria was found. Radiological examination of the skeleton showed no abnormalities. The stool benzidine test was repeatedly negative. A third sternal puncture showed numerous late normoblasts. Folic acid and molybdenized ferrous sulphate were in turn given a trial, but produced no haematological or clinical benefit.

It was now decided to try saccharated oxide of iron intravenously. The preparation was made up according to the method described by Nissim (1947). She was first given 10 mg. of elemental iron as saccharated iron oxide in 1 ml. of solution, the dose being increased to 20 mg., 25 mg., and 50 mg. on successive days. Thereafter she received 14 injections of 100 mg. in 10 ml. of solution over a period of approximately 50 days. During this period the haemoglobin rose from 36% to 90% and the red cells from 2,860,000 to 4,650,000 per c.mm.

Her general clinical state was now excellent. All therapy was stopped, and when the patient was seen again a month later her haemoglobin was 94%; erythrocytes, 4,690,000 per c.mm.; colour index, 1.

The maximal reticulocyte count of 3.2% was on the tenth day after the first intravenous injection of iron. The patient had marked reactions (sickness and rigors) with the last three injections, all of which were given very slowly.

Severe reactions have also occurred in several other cases of iron-deficiency anaemia which we have treated with a solution of saccharated iron oxide given intravenously. We would therefore suggest that further work is required on the preparation of solutions of iron for intravenous injection before parenteral iron treatment is used by general practitioners.

REFERENCE

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Medical Memoranda

Bilateral Tubal Gestation

The following case of bilateral tubal pregnancy encountered in Iraq is of particular interest as it occurred in a patient known to have salpingitis.

CASE REPORT

The patient, an Arab married woman aged 30, had had two children, aged 10 and 4. Following the birth of the second child she developed a discharge and was found to have a gonococcal cervicitis and salpingitis. Until her admission she did not conceive again. Her periods had been moderately regular, but the accuracy of this statement is open to doubt. She had been in hospital on several occasions during this time with lower abdominal pain and vaginal discharge, diagnosed as salpingitis, the last admission having been eight weeks before her present illness. Again gonococci were found in the cervical smear. She returned complaining of an attack of left-sided abdominal pain and discharge, but in addition stated she had missed two periods.

On admission she was in no distress. The pulse was 90 and the temperature normal. There was tenderness in the left iliac fossa, and vaginal examination showed a little bloody discharge, normal uterus and cervix, and a tender, rather indefinite swelling connected with the left tube. A diagnosis of salpingitis, but with the reservation that an ectopic gestation might be present, was made, and she was kept in bed in Fowler's position and given sulphathiazole. The pain subsided, but four days later she had a sudden attack of severe right lower abdominal pain, with a rise in pulse rate and abdominal distension, associated with tenderness and fullness in the right fornix. A blood count showed: red cells, 4,000,000; white cells, 11,000 (75% polymorphs). She was not severely ill or distressed in spite of this, and laparotomy was not performed. The distension and pain decreased steadily, and it was not until fourteen days after this attack that laparotomy was undertaken. Then the physical signs had altered radically. The swelling on the left was more definite, and was a mobile mass in the left iliac fossa, not felt from the pelvis at all. The uterus was raised and displaced to the left, and there was a semi-cystic swelling in the right fornix extending up into the right iliac fossa.

Operation.—A lower midline incision was made under general anaesthesia. There was a typical left tubal pregnancy occupying the distal half of the tube, with no sign of leaking of blood into the peritoneum. This was removed. On the right there was a haematoma walled off by adhesions extending into the pouch of Douglas and up into the right iliac fossa. The blood clot was removed. There was no sign of a bleeding point, but the uterine end of the right tube was eroded completely through for about an inch (2.5 cm.), the ends being friable. There did not seem to be any doubt that the haematoma had originated from here and could only have been from a tubal gestation. The ends of the tube were ligated and the abdomen closed. Search for embryonic remnants in the clot was not successful, but considering the probable original size of the gestation this was not surprising. Section confirmed that the tumour removed was a tubal gestation, chorionic tissue being seen in the sections. Recovery was entirely uneventful.

COMMENT

Bilateral tubal pregnancy is rare, the last report of a case in the *British Medical Journal* being in 1937 by McIlrath. Cox and Steinberg (1942), in reporting a case, state that 80 cases are on record in readily available literature, but I cannot be certain whether McIlrath's case is included among these. A further case was reported by Tractenberg (1944).

The question whether the foetuses would have been simultaneously viable or not is a point of great interest in these cases, and is raised by Fishback (1939) in a general review of this subject; but, there being no visible remnants of the products of conception on the right side in the present case, no good comparison can be made. However, it is probable that the right foetus was younger than the left, as the latter gave symptoms only while the patient was in hospital, and it was not palpable on admission.

It will be noted that laparotomy was delayed in this patient, and a word of explanation might be of interest. In this part of Iraq non-urgent abdominal operations can be undertaken with complete safety, but operations for acute abdominal conditions carry an abnormally high liability to complications, most commonly an intractable ileus. I can offer no explanation of this, but it has been the experience of several surgeons serving in this area.

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The Royal College of Nursing has arranged, with the approval of the Ministry of Health, a course for nurses on venereal diseases to be held on May 31 to June 26. It will be open to trained nurses who have been employed for at least six months in a venereal-diseases department. An examination will be held at the end of the course and a certificate awarded to successful candidates. Information may be obtained from: Director in the Education Department, Royal College of Nursing, Henrietta Place, Cavendish Square, London, W.1.

Reviews

CUSHING

Harvey Cushing. A Biography. By John F. Fulton. Publication No. 13 Historical Library, Yale Medical Library. (Pp. 754; 150 illustrations. 30s.) Oxford: Blackwell Scientific Publications.

Many will have had the pleasure of reading this book already, but its virtues are so great that it is only just that it should be referred to in these columns. Harvey Cushing added to his great scientific reputation by his excursions into the field of medical history and biography, notably by his well-known *Life of Osler*, and it is only natural that Prof. Fulton's biography should invite comparison. The differences between the two biographies lie chiefly in the disparity between the two subjects. Both have used similar methods: there are long extracts from journals and letters linked by a narrative commentary.

Official biographies may be deadly dull when they are written during the lifetime of close members of the hero's family. Osler emerged perhaps a trifle over-sanctified. The "Life" is enlivened by many flashes of criticism, directed of course at personal traits rather than total achievement, and it is all the better for it. Prof. Fulton has performed his task with great discretion and with the warm sympathy and insight which would be expected from one closely associated with his subject for so many years.

Cushing and Fulton shared a devotion in different ways to the nervous system, but the lasting bond between them, besides a very great mutual liking, was their passion for the history of medicine. This love of old books had been the original link between Cushing and Osler during the former's formative years in Baltimore, and it was this pursuit that made Oxford a home in Europe for Cushing after Osler had gone there. It brought Cushing many warm friendships, notably with A. C. Klebs, who, though not so intelligent as Cushing, was a better scholar than he.

Prof. Fulton has traced all these interesting threads in a way that is at once clear and interesting. Cushing's contribution to his own subject of neurosurgery shines from these pages, though Prof. Fulton does not venture on an analytical appraisal of Cushing's work on brain tumours. He touches on Cushing's inability to give as much credit as he should have done to others, especially to Horsley. In his middle period Cushing came to look on himself almost as the owner of the surgery of the nervous system. But despite those blemishes the guiding principles in all his work were admirable, notably his belief in the unity of medicine, his desire that no specialty should become isolated, and his lack of interest in the money motive of personal advancement.

Cushing's life history is that of a man dedicated to a particular service. He streamlined himself by refusing the distractions that pull the average man now this way now that to the ultimate diminution of his achievement. No one has devoted himself more passionately to an ideal by giving himself up wholly to the study of a special field of medicine. It meant for Cushing, first, improvements in method; secondly, a better understanding of the nature of different intracranial tumours and their effects; thirdly, a further improvement in methods based on the second, and so forth endlessly.

We turn the pages of this book with wistful eyes as we read of the Continental congresses and scientific meetings freely attended by famous men of all nations and realize sadly how much we miss by our present-day immobilization. Perhaps the biographer has given too much prominence to these public occasions, though an official "life" must necessarily record them all. On the whole Prof. Fulton has written a well-balanced book about one of the most remarkable and dynamic men of our time.

GEOFFREY JEFFERSON.

JOINT DISEASES

Arthritis and Related Conditions. Edited by Theodore Franklin Bach, M.D., F.A.C.P. (Pp. 472; 139 illustrations. $6.50 or 36s.) Philadelphia: F. A. Davis Company. London: H. K. Lewis and Co. 1947.

The late Dr. Garfield Snyder originally planned this book, but owing to his untimely death Dr. T. F. Bach and his collaborators took over the task. The result is a somewhat uneven and often diffuse work on many aspects of joint disease and associated conditions. It is intended for the general practitioner, but it is more suited to the student. Those who wish to extend their knowledge of a group of diseases difficult to understand will find it interesting; the opening historical chapters will particularly please them. The elaborate classification and the form recommended for recording the history and physical examination, excellent though they may be for the intern, may put the busy doctor off at the outset.

The authors give much attention to the problem of focal infection and emphasize its importance, but the absence of controls weakens the conclusions. In the account of the gall-bladder and intestinal tract the figures convey the impression that the incidence, especially of gall-bladder infection, might be nearly as great as in patients with no evidence of arthritis. The dietary recommended for the arthritic, excellent though it may be, is quite impossible for most patients in Britain to obtain, and the food advised for one day's consumption would be found difficult to provide for three days under the present rationing conditions. The authors pay scanty attention to fibrositis and overlook much of the important work done in England during the last few years. Possibly this form of rheumatism is not so frequently met with in the U.S.A. Some of the suggestions for treatment provoke criticism: the use of paraffin wax for packs with a melting point of 167–176° F. (75–80° C.) is rather startling; the wax used in Britain has a melting point of 122° F. (50° C.) and the maximum temperature to be reached in its application is 140° F. (60° C.). The chapter on functional disorders of the foot is one of the best and contains much original observation and practical advice on treatment within the province of the general practitioner. The section on manipulation, with the directions given for splinting and supports of various types, is likely to be very useful.

An excellent chapter is that on *x*-ray treatment, for it is comprehensive and contains detailed information, based on wide practical experience, not readily accessible in so compact a form. That on *x*-ray diagnosis, from a different pen, is by no means as satisfactory.

C. W. BUCKLEY.

SURGERY FOR STUDENTS

Surgery. A Textbook for Students. By Charles Aubrey Pannett, B.Sc., M.D., F.R.C.S. Second edition. (Pp. 769; illustrated. 27s. 6d.) London: Hodder and Stoughton. 1947.

Of late years the general surgeon has had to give ground to the specialist on every side, and most recently published textbooks have been written by groups of specialists. This method has both advantages and disadvantages. It is true that there are nowadays fewer surgeons who can claim the encyclopaedic knowledge which the modern textbook seems to require, but on the other hand we feel some sympathy with the remark of the author in the preface to this book: "It does not seem fair to expect the student to have more exact knowledge than his examiner possesses, or to have read a series of monographs by experts." Anyway, the author has practised what he preaches and has written the whole of this book—indeed, he has done more, for all the (nearly 400) illustrations are from his clever and artistic hand. The book contains the wisdom gained in the long and varied surgical experience of one of our most versatile general surgeons, who has himself contributed notably to the advance of three or four specialties.

When the first edition appeared during the war the reviewer found it a most readable and informative manual, but the production was very austere; in this edition it is much improved, and several additions have been made to the text. The book is in several respects unusual. The author considers anatomy,

pathology, bacteriology, and operative surgery only briefly and as occasion demands. He does not discuss differential diagnosis, for if the symptoms are well known that should be sufficient. Bold and obvious printer's types appear less than in most textbooks, and there are few lists to make their orderly appeal to the student. But a philosophic outlook pervades the book. The first sentence is arresting : "A knowledge of physiology is essential for the practice of surgery." That dictum ought to be in a prominent position on every surgeon's desk. Moreover, the author has a good style. His sentences are short and crisp and well adapted for descriptive purposes. For example, we have seldom anywhere seen such a mass of facts presented in such a clear, vivid, and readable manner as in the description of concussion on p. 118 and in the account of intestinal obstruction on pp. 363–5.

At present there is much talk of reforming the surgical curriculum, of the necessity to teach only essential facts with emphasis on principles, and of the need for a new type of textbook in conformity with these changes. This book is the nearest approach yet to such a textbook. It should gain in popularity.

V. ZACHARY COPE.

E.N.T. MANUAL

A Manual of Otology, Rhinology and Laryngology. By Howard Charles Ballenger, M.D., F.A.C.S. Third edition, enlarged and thoroughly revised. (Pp. 352; 135 illustrations and 3 coloured plates. 22s. 6d.) London: Henry Kimpton. 1947.

The author sets out to write a concise textbook for undergraduates avoiding the descriptions of operations, save for two or three minor ones and tracheotomy. He bases the *Manual* on the well-known *Diseases of Nose, Throat, and Ear*, by W. L. and H. C. Ballenger, but the task of compression is difficult and the result is not altogether happy. Most of the knowledge is there, but its arrangement is not satisfactory. The accounts of common conditions and diseases receive no more prominence than rarities—for example, in the section on diseases of the external auditory meatus he discusses herpes oticus first and wax last.

There are four parts. The first, on the nose and sinuses, begins with an excellent description of the common cold. The author then discusses acute inflammations of the sinuses and advises irrigation through the normal openings, which is a treatment scarcely suitable for a student to carry out. Some statements call for criticism : "redness and swelling over an acutely inflamed sinus" a condition very rarely seen ; "transillumination is a satisfactory means of diagnosis of frontal sinusitis . . . *x*-rays are not so good" ; and he regards retrobulbar neuritis as the most important among the complications of sinusitis. The chapter on headaches and neuralgias of the face and head, a new one in this edition, is good, and he mentions all the causes and includes references to the original papers.

Part II is on the pharynx and fauces. Besides the usual accounts of diseases of tonsils there is an excellent list of indications for their removal, and a chapter on deep neck infections with helpful diagrams.

In Part III, on the larynx, the illustrations of anatomy and pathology are good. The chapter on paralysis of the larynx is written by J. J. Ballenger ; he has designed an ingenious diagram to show the nerves to the larynx and how the paralyses are produced. There is no mention of fixation at the cricoarytenoid joint, but "syphilis of the larynx may produce paralysis of one or both cords"—a somewhat loose statement.

Part IV is on the ear and is perhaps the best part of the book. The illustrations showing how to carry out tuning-fork tests are new and will certainly help the student. As in other sections omissions are curious—there is no mention of masked mastoiditis, nor is facial paralysis recorded as an indication for operation. On the other hand the account of petrositis is excellent. The illustrations (135 in number) are all clear ; there are also three colour plates.

W. M. MOLLISON.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

La Maladie Hémolytique du Nouveau-ne. By M. Bessis. (Pp. 260. 600 francs.) Paris: Masson. 1947.

An account for the clinician and laboratory worker, with reference to the author's own researches.

Éléments de Physiologie Psychologique. By P. Rijlant. (Pp. 216. 360 francs.) Liége: Masson. 1948.

Discusses the anatomy and physiology of the nervous system and their relation to mind.

Le Développement Psychique de l'Enfant et de l'Adolescent. By E. Pichon. (Pp. 240. 420 francs.) Paris: Masson. 1947.

The author discusses abnormal as well as normal development.

La Penicillina in Chirurgia. By S. Ciancarelli. (Pp. 46. No price.) Rome: Luigi Pozzi. 1948.

The author describes his technique of local injection of penicillin.

La Chirurgie Biliaire. By P. Mallet-Guy *et al.* (Pp. 138. 1,200 francs.) Paris: Masson. 1947.

An account of the surgery of the biliary apparatus with manometric and radiological control.

Confrontations Radio-Anatomo-Cliniques. Vol. II. Edited by M. Chiray *et al.* (Pp. 67. 1,200 francs.) Paris: G. Doin and Masson. 1947.

Notes on a variety of cases, with skiagraphs.

Les Tuberculiniques. By Dr. L. Vannier. (Pp. 460. 495 francs.) Paris: G. Doin. 1947.

The author describes his method of immunizing people predisposed to tuberculous infection.

Journées Thérapeutiques de Paris, 1946. Edited by Prof. M. Loeper and Dr. L. Bory. (Pp. 475. 980 francs.) Paris: G. Doin. 1948.

Includes papers on iron as a therapeutic agent and on the use of aerosols.

Nouvelle Pratique Chirurgicale Illustrée. Part I. Edited by J. Quénu. (Pp. 273. 550 francs.) Paris: G. Doin. 1948.

An illustrated practical manual.

Lehrbuch der Geburtshilfe. Vols. I and II. By T. Koller. (Pp. 613 Vol I and 1,323 Vol. II. 110 Swiss francs.) Basle: Verlag von S. Karger. 1948.

A textbook of obstetrics, including an account of foetal malformations.

Phtisiologie Infantile. By P. Lowys. (Pp. 716. No price.) Paris: Editions Médicales Flammarion. 1947.

A general account of tuberculosis in childhood.

The Foundations of Health in Childhood. By Prof. N. B. Capon, M.D., F.R.C.P. (Pp. 76. 2s. 6d.) London: The Convocation Lecture, 1947, of the National Children's Home.

The main factors determining the health of the child in infancy are discussed.

Factors Regulating Blood Pressure. Edited by B. W. Zeifach and E. Shorr. (Pp. 175. $1.90.) New York: Josiah Macy, Jr., Foundation. 1947.

Collection of papers read at a conference in 1947.

Textbook for Almoners. By D. Manchée. (Pp. 466. 27s. 6d.) London: Baillière, Tindall and Cox. 1947.

A general account of the almoner's functions and duties.

Children by Choice. By Dr. E. Chesser. (Pp. 127. 5s.) London: Torchstream Books. 1947.

A practical manual of birth control for the layman.

1947 Year Book of Obstetrics and Gynecology. Edited by J. P. Greenhill, M.D. (Pp. 590. 21s.) London: H. K. Lewis. 1948.

A synopsis of recent advances.

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SATURDAY APRIL 17 1948

MR. BEVAN'S GESTURE

Since the publication of the plebiscite results the medical profession and the Minister of Health have avoided direct contact with each other, but have also avoided making statements that would make renewed discussions impossible. At the Special Representative Meeting on March 17 the Chairman of Council, Dr. Dain, made this highly significant statement: "We are ready to enter into any discussions directed to making it possible for the medical profession to co-operate with the Government. If the Government can show us other ways, new ways, of preserving our independence we are willing to listen." In the same week the Royal College of Physicians of Edinburgh submitted a number of resolutions to the Prime Minister urging the resumption of negotiations and drawing attention to the fact that the fears of the profession centred round the power of the Minister to alter by Order or by Regulation the fundamental terms of service of the profession. On April 4 the Royal College of Physicians of London made public the resolutions passed by the Comitia on March 22 and forwarded them to Mr. Aneurin Bevan. These resolutions reaffirmed the opposition of the College to a whole-time medical service, requested an amending Act to prevent the introduction of such a service by Regulation, and suggested that Regulations affecting the National Health Service should be subject to special procedure. In the House of Commons on April 7 Mr. Aneurin Bevan made a statement to the House in which he undertook to make statutorily clear that a whole-time service would not be brought in by Regulation. Mr. Bevan also suggested important modifications of his previous proposal for a universal basic salary. He suggested that all new entrants to practice should have "this assured element of £300 for a period of, say, three years." After that the practitioner could decide whether to continue with the fixed element of £300 plus capitation fees, or to be remunerated by "plain capitation fees"—at a higher proportionate rate than when he was receiving the fixed element of £300. Mr. Bevan said:

> "So now it can rest with the individual doctor himself to decide the extent to which he prefers the combined system of £300 plus lower capitation, or all capitation—with the exception that beginners will start with three years on the former system."

In reply to questions put by Mr. Clement Davies, Mr. Wilson Harris, and Dr. Segal, he reiterated his wish to discuss these matters with representatives of the medical profession. On the day following his statement—April 8—he announced the composition of the Legal Committee set up to inquire into the meaning of Section 35 of the Act, two of the members of this Committee being Sir Cyril Radcliffe and Mr. J. H. Stamp, whose opinion on this Section was sought by the B.M.A. last year and published in the *Supplement* of Dec. 20, 1947. On April 8 the National Health Service Executive Committee of the B.M.A. Council met to consider the new situation and issued a statement welcoming the observations made by the Minister, and inviting him to receive a deputation to consider a series of written questions put to him in advance of the meeting. The B.M.A.'s questions and the Minister's answers are published elsewhere in this issue, and were considered by the Council on Wednesday.

Mr. Oliver Stanley, Conservative M.P. for Bristol West, made this comment on Mr. Bevan's statement: "I am sure that, speaking for everyone on this side of the House, we welcome anything which tends to break the deadlock which has occurred, and above all we welcome the tone in which the right hon. Gentleman has spoken to-day." We believe that the medical profession will be equally generous in echoing Mr. Stanley's comment. Mr. Bevan has made a gesture of conciliation, and has taken steps to meet two of the principal objections of the medical profession to the present Act. The B.M.A. deputation has now put for his consideration other points of dispute. While we await the outcome of these discussions we should recognize that Mr. Bevan has taken the result of the plebiscite into serious consideration by making proposals with which many in his own party will not be in sympathy.

The Presidents of the three Royal Colleges have come in for much criticism as a result of the letter addressed by them to the Minister of Health in January of last year. The recent action of the Royal College of Physicians of London is coming in for renewed criticism of a similar kind. Those who so criticize should bear in mind that consultants have been pressing their Colleges to make a statement on the present position, and we expressed the hope in a recent leading article[1] "that the Colleges will discover what are the views of their Fellows and take steps to make them public." It is therefore unreasonable and unfair to belabour the Royal Colleges for making a corporate expression of opinion. In a leading article in the *Journal* of March 20 we stated: "We believe Mr. Bevan when he says that it is not his intention to introduce such a service [i.e., a whole-time salaried State medical service], and it is no reflection on him to say that this expressed intention is no safeguard to the medical profession. . . ." And we continued thus: "There is nothing in the present Act which offers the safeguard required, and the logical conclusion is that nothing short of an amending Act would provide this safeguard." The Comitia of the Royal College of Physicians on March 22 passed its resolution requesting such an amending Act, and on April 7 Mr. Bevan agreed to introduce one. It would be undignified to indulge in a squabble for priority for a suggestion that has been fairly widely mooted, and in a country where freedom of

[1] *British Medical Journal*, 1948, **1**, 550.
[2] *The Times*, Jan. 16, 1948.
[3] *British Medical Journal*, 1948, **1**, 53.

opinion is held dearly it would be, to say the least of it, paradoxical to challenge the right of any organization to state its opinion on a matter that is the concern of everyone. One of the principal arguments against the National Health Service Act has been that it leads to a whole-time State medical service. Mr. Bevan's proposal means that no such service can be introduced through the issue of Regulations. If any future Government were to attempt to introduce a whole-time State medical service it would have to introduce a new Bill which would be submitted to public debate in Parliament and on which the medical profession would have full opportunity to make its views heard; and we may note here that the plebiscite conducted by the B.M.A. has had its effect in persuading the present Government to introduce a safeguard that has been demanded by the medical profession.

The second resolution of the Royal College of Physicians has received less attention than the first, and was not referred to in the House of Commons by Mr. Bevan. It was on the same lines as the resolution passed by the Royal College of Physicians of Edinburgh. Both these Colleges drew attention to the power possessed by the Minister to change by Regulation the character of the National Health Service, and the London College suggested "that an amending Bill should be introduced to make Regulations affecting the National Health Service subject to special procedure." But in his reply (No. 7) Mr. Bevan is not impressed by this proposal. The powers of the Minister under the Act are considerable and, indeed, alarming. We understand that the special procedure suggested in the College resolution is neither impracticable nor unconstitutional. Under such a procedure proposed Regulations published in draft are submitted to a commission given power to reject or amend them if it can be shown that the Regulations would change the character of the Service. Such a commission would have on it members of the two Houses of Parliament and medical and legal representatives. At a time when so many activities of the people of this country are governed by Regulations that pour out in a steady stream from departments of State, some such procedure as this would seem highly desirable, and in the case of the medical profession would offer a much needed and additional safeguard against meddlesome bureaucracy.

Of the much publicized four points, the one that has received most emphasis and most opposition is the universal basic salary. As there seemed to be no logical reason for forcing men in established practice to receive part of their remuneration in this way, general practitioners not illogically saw this as the first possible step to a full salaried medical service, and in any case linked to the control of certification. In a recent letter to *The Times*[2] Dr. Dain said: "We would support Mr. Bevan if he used the basic salary to induce men to serve in difficult areas, or to help the young man entering practice." In a leading article in this *Journal* about the same time[3] we observed: "It should be clear that no objection has been raised to the use of the salary to attract men into difficult or undesirable areas or even to help the young man entering practice for the first time." Mr. Bevan by his statement has removed the objection to the universal basic salary. While we recognize that this is a big concession on his part, his suggestions in the Commons introduce anomalies that are not entirely satisfactory. We would stress the questions of need and equity. For example a man may enter general practice as a partner and would therefore not need a guaranteed minimum salary. Again a proportion of men in practice exercising the option for a basic salary would be better remunerated for the same work than those who did not exercise the option. Mr. Bevan (Reply No. 8) now expresses his willingness to discuss with the profession the conditions and methods by which opting will be conducted.

Mr. Bevan's answers came too late for full comment in this issue. We note in particular his observations on the preservation of professional freedom with the abolition of buying and selling practices: doctors, for example, will be free to choose their partners and assistants. The medical profession has committed itself to a comprehensive medical service for the whole community, and such a service has the support of all political parties, Mr. Bevan's Act being the final outcome of plans laid down by a Coalition Government. The medical profession must also recognize that Mr. Bevan, after violently attacking the medical profession in a debate earlier this year, has sought to resolve the deadlock by using temperate and conciliatory words in putting forward his new proposals. There is, therefore, everything to be gained in responding to this gesture in a similar manner.

THE CHEMOTHERAPY OF CHOLERA

The cholera vibrio is one of the few organisms which seemed completely to have escaped the chemotherapeutic net. The treatment of cholera remained symptomatic, and consisted largely in combating the intense dehydration of the tissues by hypertonic saline rather than in destroying the vibrios. Attempts had indeed been made to combine sulphaguanidine with hypertonic saline, but without any conspicuous success. In view of the impotence of chemotherapy it is therefore not surprising that in many outbreaks, especially where skilled nursing was unavailable, the mortality rates remained high. In our issue of April 3 (p. 650) we drew attention to a preliminary communication by Bhatnagar and his colleagues[1] in which they described a new chemotherapeutic approach to cholera. In our present issue (p. 719) we publish in full the data at present available on the treatment of cholera by a new sulphonamide compound, provisionally termed "6257."

The starting-point for this investigation was an observation made by Bhatnagar in 1939 that hexamethylenetetramine in a 10% solution in normal saline killed the cholera vibrio in less than half an hour, even when the organisms were in high concentration. Attempts to link hexamine and sulphanilamide produced compounds which gave promising results in the treatment of animals experimentally infected and in human cases of cholera, but a

[1] Bhatnagar, S. S., Fernandes, F., De Sa, H., and Divekar, P. V., *Nature*, 1948, **161**, 395.
[2] Meier, R., *Schweiz. med. Wschr.*, 1946, **76**, 695.
[3] Druey, J., *Helo. chim. Acta*, in press.

chance discussion revealed that Meier[2] and Druey[3] had evolved a new product, 6257, by the condensation of two molecules of sulphathiazole and three molecules of formaldehyde. The exact constitution of the new compound is at present uncertain, though its formula is given as $C_{21}H_{22}O_6N_6S_4$. If it is really a condensation product and not, as are most sulphonamide derivatives, a substitution in, or an addition to, the radicals of sulphanilamide, it represents a type of compound the chemotherapeutic possibilities of which have not yet been fully explored.

Preliminary *in vitro* experiments showed that 6257 was bacteriostatic or bactericidal against the Inaba and Ogawa strains of *Vibrio cholerae*. Owing to the relative insolubility of the drug in water it had to be tested as a 20% suspension in 2% gum arabic in distilled water. In mice the therapeutic activity was tested against the Inaba strain, twice the minimal lethal dose of organisms being given intraperitoneally. The effectiveness of the drug was considerably greater when it was administered intraperitoneally or subcutaneously than when it was given by mouth. This is apparently due to the fact that it is very slowly absorbed after oral administration. Even when injected absorption into the blood stream is slow, but as excretion also is slow it is possible to maintain in the blood of mice an effective therapeutic level by an initial dose of 80 to 90 mg. of the drug, followed by 40 mg. a day for four days. Subcutaneous or intraperitoneal injection does not cause any irritation despite the formation of a local depot.

Field trials were undertaken in the south-eastern part of the Madras Presidency during November and December, 1947. Records for the past seven years show that the infection is endemic in this area—the maximum incidence, with a case mortality of about 60%, being from September to February. The patients, who were mostly of the "untouchable" labouring classes, were all suffering from malnutrition, and were treated in their homes without any nursing or general medical care. No additional treatment in the form of salines or other palliatives was given. All cases were diagnosed bacteriologically before beginning treatment and were then classified into three groups according to the severity of the disease and the length of time during which the patients had been ill. In all, 85 patients were treated, and of these 82 survived. The average amounts given were 16 g. for a child, 23 g. for an adult female, and 25 to 30 g. for an adult male. The subcutaneous route was first tried, but, contrary to what had been found in the mouse suffering from a cholera septicaemia, in man there was little or no therapeutic action. The drug was therefore given by mouth, with good results. To overcome the tendency to vomit, 0.5 g. tablets were broken up and given in small amounts till the full dose of 6 g. had been ingested in the course of two to three hours. If this practice did not succeed, the drug, suspended in gum arabic, was given per rectum. The improvement, even in 24 hours, appears to have been remarkable, as purgation was reduced and nausea, vomiting, and cramps disappeared. Within forty-eight hours the temperature had risen to normal and dehydration was much less marked. As a rule patients could be said to have recovered at the end of seventy-two hours. Nevertheless, to ensure destruction of vibrios in the stools, a seven-day course of treatment was considered advisable. For adults the first day's dose was 10 g., the second day's 4 to 6 g., and thereafter 4, 2, and 1 g. per day. No toxic results were noted even in the most severely ill patients, a result which Bhatnagar and his colleagues suggest is due to the presence of the formaldehyde radical. It is remarkable that out of the whole series only three patients died, and they were in the group of those most seriously ill.

Though since the pathogenicity of cholera vibrios is known to vary greatly in different epidemics it would be rash to assert that a panacea for cholera has been obtained, nevertheless the results achieved in Madras and described in the opening pages of this issue are so striking that they merit further investigation on the widest possible scale.

REFRACTORY IRON-DEFICIENCY ANAEMIA

When Sydenham, in 1681, first advocated the use of iron he wrote that "to the worn out or languid blood it gives a spur or fillip whereby the animal spirits, which before lay prostrate and sunken under their own weight, are raised and excited." In most patients with hypochromic anaemia its beneficent action has justified his description, and the satisfactory results constantly obtained since the reintroduction some twenty-five years ago of adequate oral dosage have thrown into sharp relief the occasional instance in which iron cannot be tolerated or is ineffective. A small number of persons are genuinely intolerant of all preparations of iron given by mouth; in them even small doses cause abdominal pain, vomiting, and purging. In a somewhat larger number full doses may be ineffective even when the anaemia is undoubtedly due to iron deficiency.

A defect of absorption has long been considered as the cause of these refractory cases. The exact mechanism of the process is still uncertain, but Hahn and his colleagues[1 2] have shown that the quantity absorbed depends on the depletion of the body's reserves of available iron, and Granick's observations suggest that the iron-protein-phosphorus complex ferritin is concerned in its absorption from the alimentary tract. Studies of the serum iron have also thrown some light on the subject. The normal levels are accepted as 94–174 γ per 100 ml. for males and 58–142 γ per 100 ml. for females.[3] Dr. Sven Dahl's paper in this issue confirms these figures for women, and again demonstrates the fall with menstruation. In iron-deficiency anaemia the level of the serum iron is decreased, commonly to 15–40 γ per 100 ml. Five hours after a single dose of iron by mouth it rises to a peak, which may exceed 500 γ per 100 ml.[4] Powell[5] was able to show that there was no such rise in refractory cases, though in some of these a peak did occur when iron was administered concurrently with large doses of ascorbic acid, an effect attributable to the preservation of the ferrous state by the reducing action of the vitamin. A group resistant to treatment with iron by mouth remained in which no rise in the serum iron level took place.

1 *J. exp. Med.*, 1942, **76**, 15.
2 Ibid., **78**, 169.
3 Moore, C. V., Arrowsmith, W. R., Quilligan, J. J., and Read, J. T., *J. clin. Invest.*, 1937, **16**, 613.
4 Moore, C. V., Doan, C. A., and Arrowsmith, W. R., ibid., 1937, **16**, 627.
5 *Quart. J. Med.*, 1944, **13**, 19.
6 Heath, C. W., Strauss, M. B., and Castle, W. B., *J. clin. Invest.*, 1932, **11**, 1293.
7 Witts, L. J., *Proc. R. Soc. Med.*, 1933, **26**, 607.
8 *British Medical Journal*, 1893, **1**, 881, 942.
9 Goetsch, A. T., Moore, C. V., and Minnich, V., *Blood*, 1946, **1**, 129.
10 *Lancet*, 1947, **2**, 49.

Obviously it is in this group that parenteral administration might be thought desirable, but some eminent authorities have objected to injections of iron as "impractical, dangerous, and unnecessary."[6 7] The occasional necessity for parenteral treatment can no longer be denied, for there is abundant proof that hypochromic anaemia responds satisfactorily to iron administered in this way. It was thus used as long ago as 1872 by Rosenthal, and in the pages of this *Journal* for 1893 Stockman[8] recorded a rise in the erythrocyte count and the haemoglobin level in chlorotic patients after subcutaneous injections of iron sodium citrate. Recent work has shown that the injected iron is used almost quantitatively for the formation of haemoglobin.[6 9] It has been estimated that an adult with hypochromic anaemia requires 24.5 mg. of elemental iron if the haemoglobin reading on the Haldane scale is to improve by 1% per day. There is no doubt, therefore, that iron is effective when injected, but there remain the dangers. Many authors have reported alarming sequels to even moderate doses: sneezing, lacrimation, paraesthesiae, flushing, headache, tachycardia, vomiting, diarrhoea, pleuritic pain, and circulatory collapse are all recorded.[9]

Descriptions of reactions have been sufficient to deter most physicians, but a paper published last year by Nissim[10] has revived interest in this important topic. He found that a solution of saccharated iron oxide could be prepared which caused no serious reaction when injected intravenously in quantities containing as much as 1,000 mg. of elemental iron. In this number of the *Journal* Prof. L. S. P. Davidson and Dr. R. H. Girdwood report an example of refractory iron-deficiency anaemia successfully treated by this method. Reactions occurred with the last three injections of 100 mg. of iron, and the authors do not feel that Nissim's solution is yet to be recommended for general use. In a letter to the Editor, also in this issue, Drs. H. G. B. Slack and J. F. Wilkinson mention their use of a similar preparation and promise a detailed description of the satisfactory results, with absence of reactions, obtained in 55 cases treated by this method.

LOCAL GOVERNMENT BOUNDARIES AND FUNCTIONS

The Local Government Boundary Commission have issued their report[1] for the year 1947, and if their recommendations are accepted by Parliament and the necessary legislation enacted there will be many changes not only in the boundaries between local authorities but also in their functions. It is stated in the report that after standing up successfully to the strain of total war and enemy attack the local government machine now has "the less spectacular but not less arduous work of dealing simultaneously and in circumstances of great difficulty with the immediate tasks of housing and of looking after the local welfare of a population which is re-sorting itself and turning over from war to peace, as well as all the problems involved in organizing and managing new systems of education, health, planning, fire services, the care of the young and the old, and many other services."

Since 1888 there has been no general review of the areas of counties, and of course the changes in the functions of local authorities since that date have been vast. There has been a constant struggle between the county boroughs and the counties, largely owing to the needs of the former for *Lebensraum* at the expense of the latter. The counties have accused the county boroughs of going their own independent way without considering the wishes of the people who live outside the boundaries of the towns, and the county boroughs have reacted by making it plain that they consider the county councils interfering busybodies. Meanwhile the district councils—urban, rural, and non-county boroughs—have sadly watched their powers disappearing either to the central government or to the county and county borough councils. In fact, as the Boundary Commission imply, the inhabitants of some areas have been denied the use of public services such as main water and drainage because of the iron curtains which have been drawn along existing boundaries.

The recommendations of the Commission include some realistic compromises and appear to be both sensible and workable. It is proposed that there should be three units of local government—counties, county boroughs, and county districts. Excluding Greater London, the special problems of which still remain to be settled, there would be seventeen "one-tier" counties—large towns, or amalgamations of several towns such as the Potteries—which would be autonomous. The rest of England would be divided into forty-seven "two-tier" counties in which local government functions would be carried out partly by the county councils and partly by the county boroughs and district councils within the county. The new county boroughs, which would have populations of between 60,000 and 200,000, would be "most-purpose" authorities but not completely independent of the county councils. The distinctions between the present county district councils—namely, the non-county boroughs and the urban and rural districts—would be abolished.

If the Boundary Commission's proposals could have been carried through before the passing of the National Health Service Act the regionalization of the hospitals might have been planned differently, but in other respects the Commission's recommendations would not have a great effect on the pattern of the new health services. The main difference would be that the medical officers of health of some towns which are not now county boroughs and are under the yoke of a county council would be able to assume independence and plan local health and school medical services with responsibility only to their own councils.

It remains to be seen whether the central government will take the risk of bringing in a Bill to put the Boundary Commission's recommendations into effect. While there may be comparatively few people who feel strongly about the functions of local authorities, a great many will hotly contest the revision of town and county boundaries. Already M.P.s have been declaiming, "We do not want our town to become part of ——shire," and doubtless the inhabitants of Rutland and other counties which may disappear are becoming uneasy. Worst of all, there is a hint in the Commission's report that a small part of Yorkshire might be transferred to one of the proposed new Lancashire counties. Civil wars have broken out for less.

YOU KNOW MY METHODS

The methods of medical diagnosis are akin to those employed by detectives on the scent of crime—at least by detectives in fiction, whose methods alone we have had the opportunity of studying. Our leading clinicians would surely approve of Sherlock Holmes's unflagging examination of minute detail—"It has long been an axiom of mine that the little things are infinitely the most

[1] *Report of the Local Government Boundary Commission for the Year* 1947. London: H.M.S.O. 1s. net.

important "[1]—and his insistence upon the need for hard facts—"It is a capital mistake to theorize before one has data."[2] That the medical man can learn much from Holmes's methods is only to be expected, for in relating them Conan Doyle was describing those of the famous Edinburgh surgeon, Joseph Bell, whose character inspired him to create Sherlock Holmes. Dr. Douglas Guthrie defended in these terms—if any defence before the Philistines were necessary—a delightful afternoon spent by the History of Medicine Section of the Royal Society of Medicine on April 7, when it held a symposium on "Conan Doyle and the Doctor and Detective Fiction."

Sir Arthur MacNalty opened the discussion with a biographical sketch of Conan Doyle, mentioning incidentally that his first medical publication was a letter to this *Journal*,[3] written two years before he graduated, on overdosing himself with gelsemium in order to determine the maximum safe dose. He drew attention to his curiously ambiguous attitude towards the Sherlock Holmes stories. Conan Doyle regarded them as being distinctly inferior to his historical works, and, becoming tired of his hero, tried to consign him to an honourable death in the last fight with Moriarty, but so great was the public clamour that he had to resuscitate him for a new series of stories. Two of the later speakers mentioned that friends of theirs had burst into tears on learning of Holmes's death. Unfortunately the reason for this deep attachment was not elaborated upon. No doubt our pleasure derives in the first place from the skill with which Holmes's character is delineated; and indeed his was a character that is peculiarly attractive to Englishmen, for he was the inspired amateur, the intellectual who played the violin exquisitely, practised revolver-shooting in his flat, took cocaine, walked about in a dressing-gown, and above all studied men and society rather than books. Moreover, since the rise of Puritanism we have been rather a self-righteous people, and the pursuit and bringing to justice of the wayward and criminal in our society and in ourselves is an appealing prospect. Perhaps too our industrialized readers of detective fiction, reading of the doom that inevitably and with such ingenuity overtakes the criminal, obtain that catharsis that the Greeks experienced when watching their tragedy.

Mr. Zachary Cope, who eulogized Dr. Watson in a delightful Petrarchian sonnet, rightly pointed out what a loss it had been to medicine that Watson never described how he succeeded in weaning Holmes from his addiction to cocaine; nor indeed did he ever persuade Holmes to adopt tidier habits. In view of Holmes's distinctly "bohemian" character it is not surprising that, as Dr. Guthrie said, Joseph Bell did not feel flattered by his close relation to this fictitious idol of the British public. The connexion was readily discernible, for the well-known sayings of Holmes were often originally the words of Bell. The surgeon, like many other great clinical teachers, would constantly impress on his students, of whom Conan Doyle was one, that they must never trust general impressions, and he would then stress the importance of trifles. Sir Robert Young in the discussion advocated the same view —"Every doctor is a detective." He taught his students, he said, by making them examine the patient and relate everything that they noticed.

Holmes's education was then discussed at some length, Mr. S. C. Roberts, an authority who has written a book on Dr. Watson, pointing out that so far as is known Holmes never went to school. Perhaps he had tutors; undoubtedly he went to a university, probably Oxford or Cambridge, Oxford being the more likely. There is no evidence that he obtained a degree, nor even that he worked for one. He had read deeply on certain subjects—chemistry is mentioned—but he regarded detection as an art rather than as a science, and deduction as a form of artistic feeling. Clinicians might cautiously agree that that is true also of diagnosis. Nowadays, when the first thought of the newly qualified house-man is often to consider what laboratory tests he should order for his patient and in what order, he could do worse than learn the value of unaided intelligent observation, the patient collection of data, and deduction from sufficient evidence that Sherlock Holmes displayed to perfection.

[1] *A Case of Identity.*
[2] *Scandal in Bohemia.*
[3] *British Medical Journal*, 1879, **2**, 483.

GOLDEN JUBILEE OF THE R.A.M.C.

Just over fifty years ago a deputation from the British Medical Association[1] waited upon the Marquis of Lansdowne, the Secretary of State for War, to lay before him the views of the medical profession on the condition of the Army Medical Services and the need for certain reforms. It appears that the deputation was welcomed[2] and assured that the Secretary of State was entirely with them in regarding with very serious concern the problems raised. Lord Lansdowne said that the most important suggestion[3] that had been put forward by the deputation was the one proposing the formation of a medical corps, which it was thought should be created by the consolidation of the Army Medical Staff and the Medical Staff Corps. Only a few months later it was announced that this change had been brought about and that Her Majesty had been pleased to signify her intention of bestowing the title "Royal" upon the new Army Medical Corps.[4]

The Royal Warrant of Queen Victoria was dated June 23, 1898, and at the same time the familiar badge with the motto *In arduis fidelis* was designed and dull-cherry facings appeared on the uniforms of all ranks, the same colour replacing scarlet for the piping on tunics and for trouser welts. Later in the same year the Corps made its first formal appearance in the field as part of the Nile Expeditionary Force of 1898. The history of the Corps in the 1914–18 war is well known, and its achievements in recent years evoked world-wide admiration.

The Golden Jubilee of the Corps will be fittingly celebrated on June 23. Her Majesty the Queen, who is Colonel-in-Chief, has graciously expressed her intention of visiting the depot and training establishment at Crookham on that date. There will also be celebrations of a different kind in other parts of the country. In London a Jubilee Rally will be held in the Central Hall, Westminster, when short addresses will be given by Sir Alfred Webb-Johnson, P.R.C.S., General Sir James Steele, the Adjutant General, and General Sir William Slim. On this occasion the Corps Band and Bugles will introduce a new regimental march to the public.

General Sir Alexander Hood, whose retirement as Director General of Army Medical Services was announced only recently,[5] informs us that a most cordial welcome will be extended at the celebrations to all who have served with the Corps during the last fifty years, and also to the sister medical services in the Royal Navy and Royal Air Force. Further particulars may be obtained from the Hon. Secretary, R.A.M.C. Association, at 84, Eccleston Square, London, S.W.1.

[1] *British Medical Journal*, 1898, **1**, 39.
[2] Ibid., 1898, **1**, 236.
[3] Ibid., 1898, **1**, 329.
[4] Ibid., 1898, **1**, 1215.
[5] *Lancet*, 1948, **1**, 524.

B.M.A. QUESTIONARY TO MINISTER

1. The Minister stated in the House of Commons that the Government proposed to make it impossible to institute a full-time salaried service by regulation alone. The profession welcomed that statement. Would the Minister indicate how it is proposed to do this; first, in relation to general practitioners, and, secondly, in relation to hospital staffs?

2. As this proposed step in its relation to hospital staffs would appear to involve a policy of keeping whole-time consultant and specialist appointments to a minimum would the Minister agree to preserve, to the extent to which the public desires it, existing private accommodation as such so as to make possible the continuance of the part-time system of consultant and specialist staffing of hospitals?

3. Would the Minister state what assurances exist or can be given that hospitals or similar establishments not taken over on the appointed day or later established privately will not subsequently be the subject of compulsory purchase under the Act?

4. Does the Minister agree that it should be required that in relation to every hospital there should be a medical committee; that such medical committees should be represented by their own nominees on Boards of Governors or Hospital Management Committees, enjoying the full status of membership of such bodies; that in the case of teaching hospitals the medical committee should be representative of all consultants and specialists on the staff, teachers and non-teachers?

5. Will the Minister extend his assurance on the subject of freedom of speech and publication within the new Service to include not only such freedom on professional and scientific matters but also the right of criticism on matters of administration?

6. Would the Minister state what security in relation to their hospital appointments will be enjoyed by existing members of hospital staffs at the time of taking over and by hospital staffs subsequently? Does the Minister contemplate the establishment of machinery for the investigation of complaints, including the right of appeal against any decision of the Board of Governors or Regional Hospitals Board?

7. Will the Minister indicate his view on the second resolution of the Royal College of Physicians, viz.:

> "A principal cause of the present discontent with the National Health Service is the power possessed by the Minister of Health to change its character by regulations. The College therefore suggests that an amending Bill should be introduced, to make regulations affecting the National Health Service subject to special procedure."

8. The Committee, while welcoming the abandonment of the universal basic salary, submits to the Minister the following points for consideration:

> It is accepted that there are circumstances in which some practitioners need regular annual payments of the kind suggested; the amount of such payments will vary with different practitioners according to the circumstances under which they work. In some cases such annual payments should be for a period, in others permanent. The Committee suggests that the object the Minister has in mind of enabling practitioners needed in an area to practise there will be served more efficiently and economically if such payments are made on the recommendation of the Local Executive Council according to the circumstances of each case. In this way such payments will not be made to practitioners who do not need them, and where they are made they will be related to the actual needs revealed by the individual case. Will the Minister accept this modification of his own proposal?

9. The profession is anxious to co-operate with the Minister in remedying any defects which may exist in the distribution of general practitioners in relation to the needs of the population. Their representatives have argued that the introduction of a service available to all will of itself go a long way towards the solution of any problems which may exist, any residual problem being met by the Minister's power to appoint practitioners to under-doctored areas. The Minister has agreed that there are likely to be few areas where the question of consent to new participants in the Service will arise. Bearing in mind the profession's dislike of the proposed limitation of movement, coupled with its desire to solve any existing problem of distribution, it is suggested that the introduction of the scheme laid down in the Act should be postponed for an agreed period, in order that it may be determined by experience whether the problem does in fact largely solve itself or whether the operation of the provisions of the Act in this respect is necessary. During such period the profession will gladly establish an advisory machinery to keep practitioners informed of available appointments and opportunities. Will the Minister agree to such a deferment?

10. Would the Minister agree to request the Lord Chancellor to appoint a High Court Judge to the Chairmanship of the Tribunal?

11. The profession urges the preservation of the ownership of goodwill in general practice because of the essential professional freedoms which it safeguards. Will the Minister indicate how, with the abolition of that ownership, these freedoms will be preserved and in particular

(*a*) freedom to choose the area of practice and one's medical colleagues, partners, and assistants;

(*b*) freedom to allocate duties and responsibilities within a partnership or group;

(*c*) freedom to decide when an additional partner or assistant is necessary;

(*d*) a say in the choice of a successor?

12. Will the Minister explain why it is necessary to limit the practice of midwifery to practitioners *with special qualifications* under the English Act, whereas no such limitation is thought necessary in the Acts for Scotland and Northern Ireland?

13. Will the Minister give an assurance that practitioners not in the new Service will be able to obtain for their patients, as benefits under the Service, such consultant and specialist, including diagnostic, help as they may deem to be necessary?

14. Does the Minister agree that the appointment of members of the medical profession to administrative and other bodies should be in consultation and agreement with the representative bodies of the profession?

[For convenience "the Minister" is used to include the Minister of Health and the Secretary of State for Scotland.]

MR. BEVAN REPLIES

The Minister and the Secretary of State for Scotland have considered the fourteen questions which the British Medical Association sent to them on April 8 and which were discussed with representatives of the Association on April 12. A summary of their replies is set out below.

1. There has not yet been time to work out the actual wording of the new measure, and when he does so the Minister will welcome the help of the profession.

For general practitioners the proposed effect of the new provision will be that they are paid entirely by capitation fee, except for the new practitioner in his opening three years and any other practitioner who himself opts to have a fixed annual element in his salary with the rest on a capitation basis. The question of conditions under which that option should be exercisable is mentioned under question 8 below.

As to hospital staffs, there seems to be some misunderstanding. The "regulation versus statute" issue does not arise in the same way in their case; nor does that of "capitation versus salary or sessional fee." Hospital appointments (usually part-time for specialist staff) will be offered, by advertisement or otherwise, in the ordinary way, and people will accept them or not as they choose; there is no kind of compulsion nor any power of compulsory transfer to other areas or hospitals. If any regulations are made under Section 66 of the Act the Minister will exclude from them any provision for universal whole-time specialist services. Appointments of specialist staff will rest with Regional Boards and the Boards of Governors of Teaching Hospitals, and there will be special professional advisory machinery for advising on the suitability of applicants—in the manner often previously explained. (As to existing staff, see 6 below.)

2. It has always been anticipated that consultant and specialist appointments should in most cases be part-time, and—where appropriate—at more than one hospital. They are essentially

a Regional and not a local Management Committee affair. As to private pay-bed accommodation, this has been promised under the scheme and is expressly provided for in the Act. It is to be assumed that at the outset of the scheme it will lie where it is at present, but obviously the Minister cannot tie himself or the future hospital bodies to an exact future distribution now. The main point is that the continuance of part-time specialists at hospitals accords with the intention of the scheme, and there will therefore be facilities for them.

3. For obvious reasons the Minister could not give such an assurance. A particular building might become essential to the new Service, and that applies to any building (whether at present used for medical purposes or not). But the acquisition by purchase of, say, nursing homes or excluded hospitals is not in prospect. The exclusion by the Minister of 200 hospitals recently, indeed, is direct evidence to the contrary, and he would scarcely exclude a hospital first and then acquire it by purchase afterwards (and, once excluded, it could only be acquired by purchase).

If any private concern were later to contemplate spending money on a private hospital or home run for profit, and feared that the Minister would wait for it to be there and then use compulsory purchase powers on it, obviously the sensible course would be first to discuss the project with the Minister at the time, and the Department ought certainly to be ready to indicate its likely attitude straight away. The private concern would then know where it was.

4. The Minister entirely agrees with the system of medical committees in hospitals. But he could not *compel* medical staffs to set them up (nor would the Association presumably wish him to try!). He has already included in his guidance to Regional Boards and Hospital Management Committees a declaration of the importance which he attaches to the system and asked that every encouragement and facility should be given to it. He also agrees that in teaching hospitals such committees should be representative of all consultants and specialists on the staff, whether they are teachers or not.

As to the representation of medical committees on Boards of Governors or Hospital Management Committees, the Minister follows the Act, which requires the latter bodies to include persons appointed after consultation with the senior medical staff of the hospital or hospitals, and the former bodies to include up to one-fifth of their members nominated by the medical and dental teaching staff. In practice, of course, this means that both bodies will include members of the medical committees, with full membership. Moreover, the Minister certainly thinks that consultation should include consultation with the medical committee, where there is one.

5. The assurances already given cover complete freedom to publish views on the organization and administration of the Service, as well as on clinical matters, without obtaining any prior consent to do so.

6. In practice on the appointed day the existing staffs of hospitals will be taken over by the Regional Hospital Boards. Thereafter it will be the duty of the Boards to review the specialist services of their regions, and they will offer new appointments to their staffs either in their existing or other hospitals, which they will be free to accept or refuse as they will (see also question 1).

As to the latter part of the question, medical staffs of hospitals will be in the same general position in these respects as they are now. They will have all normal remedies for unlawful termination of any engagement, and in addition their medical committees and a Whitley machinery to help protect their interests. It will be a proper function of the Whitley organization to devise machinery for the ventilation of complaints and grievances.

7. It is not clear what is meant by this resolution, which does not explain—for instance—what "special procedure" it has in mind. Already all regulations have to be examined by a special committee in Parliament to decide whether they go beyond the scope of the Act under which they are made or whether there is any feature of them so unusual or important that the special attention of Members should be drawn to it.

Any main cause of apprehension about regulations under the Act has been removed by the undertaking to remove a full-time salaried general practitioner service from their scope. For the rest of their purposes under the Act, it seems to the Minister that regulations have advantages which the Association is overlooking. For example, it could only be detrimental to the doctors' interests if, every time some increase in capitation fee (as recently under the old Act) became desirable owing to changing conditions, it depended on finding Parliamentary time for a new Act to give effect to it. The use of regulations for things which require frequent flexibility has been familiar under the old National Health Insurance Acts for about 36 years, and has not—the Minister believes—been found anything but advantageous to the doctor.

8. The local Executive Council will certainly be consulted on the need for any variations of additional fixed annual payments to meet the needs of doctors practising in different areas.

The Minister understands, from the discussion on April 12, that what is in mind is that there will be various kinds of case where a doctor could—by taking the £300 system—profit financially himself from the equivalent of a higher rate of remuneration per patient at the expense of other doctors. The Association feel that while this is justified wherever there is need in the individual case, there will be other cases where there is no such need and where the results might be unfair—and that therefore there should be some other check on the decision than the unrestricted opting of the doctor. Within the scope of his recent declaration in the House of Commons the Minister is perfectly willing to discuss with the profession all the details of the conditions and methods through which opting will be conducted.

9. The Minister cannot agree to this further alteration of the Act, which would in any case be administratively difficult at a time when the settlement of succession to practices by sale and purchase is ceasing. The more reasonable course seems to be a review of the working of the system after an agreed period, during which it can be seen if it is as irksome as the Association seem to anticipate. The Minister is quite prepared to agree that there shall be a special review of the usefulness of this feature of the Act in, say, two years' time.

10. The Minister has already given an assurance that the chairman of the Tribunal shall be a lawyer of high standing, appointed by the Lord Chancellor. He cannot agree to stipulate that he shall be a High Court Judge. For one thing, it is too restrictive; it might well be very difficult to be sure of being able to secure the services of a Judge at any particular time. For another, a Judge, so appointed, would not be acting as a Judge when conducting the Tribunal—but simply as a lawyer of high standing, which the Minister has already promised.

11. The answers, point by point, are as follows:

(*a*) Every doctor will be free to practise where he chooses, unless it is one of the areas where the Medical Practices Committee decide no more doctors are needed in the Service. In all cases except the latter, "consent" will be automatic. Similarly, all will be free to choose colleagues, partners, and assistants unless the area requires no more (as above) or the regulations on the employment of assistants* are contravened. Where more than one doctor wishes to be the partner or assistant in question the Medical Practices Committee will be asked to observe the wishes of the doctors concerned.

(*b*) Partnerships and groups will be entirely free to allocate duties and responsibilities, as now.

(*c*) Doctors will be free to decide when an additional partner or assistant is necessary, subject to the cases where the Medical Practices Committee decide that no additional doctor at all is needed in the area and subject to the conditions about assistants.*

(*d*) A retiring doctor's views as to his successor would be taken into account by the local Executive Council, but that Council must ultimately decide what to advise the Medical Practices Committee about the new practitioner to come to the area.

12. The term "special qualifications" does not mean any special degree or diploma but simply inclusion in a list of general practitioner obstetricians compiled locally by a professional body, in accordance with the recommendation of a committee on maternal care established by agreement with the Negotiating Committee.

* The regulations about assistants require the agreement of the Executive Council to the employment of an assistant for more than 3 months. This is on the lines already familiar for the last 36 years.

General practitioner obstetricians will undertake, among other duties, to answer midwives' calls for medical aid and will be entitled to special fees.

Circumstances and practice are entirely different in Scotland.

13. Yes, within the available resources of the scheme.

14. This was settled when the Act was a Bill in Parliament in 1946. The Minister has to consult, but constitutionally the decision has then to be his. But naturally he would want to take those whose names are agreeable to the bodies consulted.

In conclusion the Minister said that the statement which he made in the House of Commons on April 7, together with the assurances which he had given to-day, represented in the Government's view the most reasonable modification of the scheme which was practicable to enable the Service to start, with the other social legislation of the Government, on July 5 next. It was, of course, their wish—as and when shortcomings were found in the scheme's working—to correct these as soon as possible, and they would do so. The Minister would always want to hear the views of the profession on any aspect of the working of the scheme. But the principal thing now was for a start to be made and experience gained.

The Minister hoped that, in view of the short period remaining, he would now have the immediate help of the profession in any consultations which he had initiated, or might initiate, with them.

AMERICAN CONGRESS OF INDUSTRIAL HEALTH

VIEWS ON STATE MEDICINE

Three thousand delegates attended a four-day conference on industrial health sponsored by the American Medical Association. The conference, which was held at Cleveland, ended on Jan. 8.

A certain amount of publicity has been given in the American press to the widely differing views of some of the guest speakers at this conference. Speaking on the opening day Mr. Max Meyer, of New York, chairman of the Board of the Fashion Institute of Technology and Design, painted a glowing picture of the improved health and welfare conditions of workers in the garment trade. He attributed this solely to the efforts of men in industry, and added: "None of the responsible groups now advocating compulsory health insurance are advocates of State medicine."

Two days later Clinton P. Anderson, Secretary of Agriculture, produced a series of depressing facts and figures to demonstrate how poor the medical care of the rural American still is. He said that at the present rate of development of local public health units it was estimated that it would take more than one hundred years to cover the whole country, and went on to say: "Typhoid claims three times as many rural as urban victims and diphtheria twice as many. The infant mortality rate is one-fourth higher and the maternal rate a third higher. During the second world war farmers as an occupational group had a rejection rate of 53.4%, as compared with an overall rate of only 43%." He also said that prepayment plans for surgical and medical services offered by State and county medical societies had reached less than 1% of rural people.

Town and Country

There exists in America to an extent undreamed of in a country of Britain's size a basic split between towns and rural areas—between the country hick and the city slicker. Mr. Anderson's report is one of many that show that, at present, the hick is having a very rough deal in the matter of medical attention. American practitioners are reluctant to leave the cities for a country practice where therapeutic facilities are poor and payment is small, or in kind, or even non-existent. The first factor is probably more responsible than the second for this disinclination. American clinical teachers stress the value of laboratory tests in diagnosis to such a degree that their pupils feel it impossible to make a diagnosis based purely on a history and physical examination.

Mr. Meyer's description of health conditions in the clothing trade is perfectly correct and, in fact, might be that of any American industry. His dislike of State medicine is also shared by the larger proportion of the country's industrialists who, rather than see the institution of a socialist measure, are prepared to pay all or part of their employees' subscriptions to private health insurance schemes. On the other hand, Mr. Meyer's statement on the reaction of "responsible" groups to State medicine must be taken with a grain of salt. Many Americans feel that voluntary health insurance can only operate in industrial areas, and then only in times of industrial prosperity and full employment. In fact only two days after Mr. Meyer's pronouncement President Truman, in his "State of the Union" address to Congress, said: "The fact is, however, that most of our people cannot afford to pay for the care that they need. I have often and strongly urged that this condition demands a national health programme. The heart of the programme must be a national system of payment for medical care based on well-tried insurance principles."

President Truman's views may not coincide with those of all Democrats, and they certainly coincide with those of very few Republicans. Nevertheless, there may come a time in the next decade or so when a Democratic President will be backed by a Democratic Congress. If by that time the advocates of voluntary insurance have not produced an efficient overall scheme it seems possible that America will join the ranks of those nations which possess a National Health Service.

Reports of Societies

PRIMARY TREATMENT OF VARICOSE VEINS

At a meeting of the Section of Surgery of the Royal Society of Medicine on April 7, with Mr. E. F. FINCH in the chair, the subject for discussion was the primary treatment of varicose veins.

Mr. DICKSON WRIGHT repeated Charles Mayo's remark that varicose veins, along with pruritus ani and some other intractable complaints, made up the "dust-heap of surgery." They had long been the despair of surgeons. With the loss of "face" which came about owing to recurrences as the years went by the operations proposed seemed to grow in ferocity. One German surgeon even went to the extent of cutting the skin spiral-wise from the knee to the ankle, leaving the resulting wound to heal by granulation. The healed legs resembled those of a Chippendale table. Another vicious method was to circumcise the skin of the leg just below the knee down to the deep fascia, so that every superficial vein was divided. This did not help the varicose veins and sometimes ended in amputation from contraction of the scar. Others carried out laborious and extensive dissection of the veins, but the results were poor. Mayo invented a ring stripper to strip out lengths of vein, and Babcock a long probe to pass down and avulse the vein.

The injection treatment, first thought of by Pravaz and elaborated by Sicard and Forrestier, provided an escape from the disappointing surgery of the day, and seemed to be a way out of the difficulty, but after an enthusiastic start the results proved disappointing on account of recurrences. An attempt was made to diminish recanalization by using different sclerosing agents, but although some were better than others the treatment proved inadequate except for the lesser cases. The cases which occurred most persistently were those in which a free communication could be demonstrated between the superficial and the deep veins. Once these valves became incompetent the veins were subject to greatly increased intravenous pressure, which would be greatly helped.

Mr. Dickson Wright proceeded to show a cinematograph film to illustrate the ligaturing of the sapheno-femoral junction—a simple operation, but one in which care was necessary because accidents such as tearing of the vein might occur. Accurate diagnosis should be made of the degree of involvement of the three venous systems—the internal and external saphenous and the gluteal. Mr. Wright stressed the need for adapting the procedure to the individual case, and the three-

reel film showed various modifications and adaptations. A case was shown which had been treated by bandaging only, and the treatment of which could have been shortened if the obviously incompetent vein had been ligated. Trendelenburg's operation was ineffective because the ligature was not made at the sapheno-femoral junction and important tributaries were left above the ligature.

After describing the details of the technique Mr. Dickson Wright added one or two points about the dangers of the ligature operation. The femoral vein might be tied in error; in such a case not much good was done, but not as much harm as might be imagined. Again, infection might occur after these wounds, but as chemotherapy was available this was not as serious a sequel as in the past. If pulmonary embolism should occur the femoral vein should be tied and the patient put on anti-coagulants. Rest in bed should be avoided as much as possible on account of the possibility of femoral thrombosis and embolism. Extensive cases were now given a general anaesthetic—thiopentone—and a large quantity (100 ml.) of a 30% saline solution was distributed in various parts of the venous system; it was hoped thereby to knock out all the affected veins in one assault. The danger of recurrence must be greatly diminished if no varicose veins at all were left as a starting-point. Contraindications to the operation were old age, obesity, and diabetes, and if the patient had a history, family or personal, of easily provoked phlebitis it was wise to abstain.

Venogram Studies

Mr. J. B. KINMONTH described the treatment of varicose veins in the light of information derived from about 100 venograms and histological studies. He referred particularly to retrograde injections at operation, which were intended to obliterate the great saphenous vein. This appeared to be an inefficient method because much of the dye was shown to go into the deep veins; very little of the injected fluid stayed in the great saphenous veins and very little went below the knee. It tended to pass into the communicating veins or the normal veins. Serial venograms after injections made into the leg showed that the optimum amount in a single injection was 1 to 1.5 ml.; larger amounts tended to spill over into the deep veins. Serial pictures also showed that fluid passing into the deep veins stayed there longer than might be expected, stayed for a longer time still in the communicating veins, and could be seen to linger in the neighbourhood of the valves—a very significant observation.

More severe cases with incompetent great saphenous valves required operation. He recommended high sapheno-femoral ligation, probably combined with ligature at knee level or at the thigh, no retrograde injection, but local injection of the calf varicosities if necessary at a later date. In a mild case injection should be practised, using the empty vein technique, with the knee horizontal. Not more than 1 to 1.5 ml. should be given at each injection, and the leg should be kept still for five minutes, after which the patient should be instructed to walk about briskly.

Prof. A. M. BOYD said that the treatment of varicose veins had been the subject of acrimonious discussion ever since Hippocrates. Treatments had been discarded and reintroduced repeatedly. The reason for the unsatisfactory results lay in the aetiology of varicose veins. He believed that varicose veins were primarily due to a congenital deficiency or weakness of the valves and communicating veins. The condition was therefore progressive and no single operation was likely to cure it. Any treatment of varicose veins was a severe assault on the circulation, perhaps more severe than was imagined. Superficial veins were very liberally supplied with nerve-endings and arteriovenous anastomoses in their walls. One of the indications for treatment was, of course, pain, but he was doubtful about varicose veins causing pain, though it was true that the posterior saphenous group did so. He thought that in some cases the cause of pain was a deep phlebitis.

The sheet-anchor of treatment was adequate ligation. He had tried to prove whether a sclerosing agent would get into the deep veins or stay there, and after some trouble in getting a suitable radio-opaque solution he was able to show that the sclerosing solution would go into the deep veins, and, what was worse, would remain on the valves. He was prepared to believe that if only a small quantity were used—say 2 or 3 ml.—comparatively little got into the deep veins and only small damage was done, but the procedure was not without danger. Below the knee it was probably safe, though now and then people were found with fairly large communications just below the head of the tibia. Bearing in mind that varicose veins were rather a doubtful cause of symptoms, and that what one was out to do was to prevent chronic venous insufficiency and ulceration, more and better ligation was probably safer than attempting by other means to produce a cosmetic result.

In some further discussion Dr. MARTIN asked what kind of supporting bandages were recommended for a varicose ulcer. Mr. SOLLY COHEN said that patients who developed embolus did so not on account of the little stump left behind in the ligature but because of the solution which flowed into the deep vein causing a clot. Mr. DICKSON WRIGHT said that he was a great believer in elastoplast in the treatment of varicose ulcers. It should be reinforced by strips of adhesive across the ulcer and after that by some felt or rubber, and the elastoplast was placed, as a rule, above that, giving a very firm support.

OPHTHALMOLOGICAL CONGRESS

Subjective Disorders of Vision

The annual congress of the Ophthalmological Society of the United Kingdom was held in London from April 8 to 10, under the presidency of Dr. A. J. BALLANTYNE (Glasgow). Prof. MARC AMSLER (Lausanne) delivered the Bowman Lecture on "The Vegetative Eye"; Prof. W. H. MELANOWSKI (Warsaw) contributed a paper in which he urged that atropine was indispensable in starting the treatment of glaucomatous iridocyclitis, and other distinguished foreign guests who joined in the various discussions included Prof. H. J. M. WEVE (Utrecht), Prof. VAN DER HOEVE (Leiden), Dr. ELES (Copenhagen), Dr. J. W. NORDENSEN (Stockholm), Dr. THOMASSEN (Oslo), and Prof. FRANCHESCHETTI (Geneva).

Medical Aspects of Disorders of Vision

The principal discussion, on subjective disorders of vision, excluding those due to local ocular disease, was opened from the standpoint of general medicine by Prof. HENRY COHEN. In the process of seeing, he said, two chains of events were concerned. The first began with the entry of light into the eye, traversing its transparent media to the receptive retinal nerve endings, whence impulses spread along well-recognized nerve pathways to excite ocular muscle movements and electrical disturbances in the brain cortex. The second comprised that still incomprehensible series of events which translated these cortical disturbances into the mental process of "seeing." Disease in either of these chains would affect vision. Such visual disturbances might arise from hereditary developmental defects, infection, nutritional abnormalities, toxaemias, vascular disturbances, degenerative lesions, and neoplastic changes.

The first major subjective disorder of vision which came to the general physician, Prof. Cohen continued, was visual fatigue, common in patients suffering from exhaustion of all types. Complaint was made sometimes of blurred distant vision, a useful sign in the differentiation of hypoglycaemic and hyperglycaemic states. Blurred near vision was not infrequently associated with diabetes mellitus, not because of the hyperglycaemia, but rather because of the associated dehydration. Patients with continued vomiting or marked diarrhoea, patients with diabetes insipidus and excessive water output, would commonly complain of blurred near vision; 15% of patients under 21 suffering from diabetes showed marked blurring.

Of visual hallucinations very little was known. No one had as yet with certainty produced a visual hallucination by direct stimulation of the cortex, yet in diseases of the cortex hallucinations occurred. Hallucinations were associated with many toxaemias. Digitalis would commonly lead to marked chromatic disturbance, frequently "white vision," in which all objects appeared to be covered with snow, but sometimes green,

or he had even seen blue, vision. Unilateral sudden blindness almost invariably had a vascular basis, while bilateral sudden blindness was usually of toxic origin. Colour blindness rarely came within the purview of the general physician. He added a word on the sudden "black-outs" which were not primarily visual disturbances but were apparently psychical in origin, such as the transient interruptions of consciousness which might occur in epilepsy. Not infrequently patients with petit mal consulted the ophthalmologist because of transient loss of vision.

Ophthalmological and Neurological Aspects

Mr. J. H. DOGGART classified subjective disorders of vision in three grades: (1) the obtrusive symptom, such as visual failure, which sent the patient rushing for medical relief; (2) the kind of sensations which could be pieced together only by expert questioning; (3) the subjective disorders, such as small field defects, which were brought out only by special tests. The same kind of symptom might be fitted to any of the categories, and its effective severity would vary with the patient's tolerance and powers of observation. One victim might be incapacitated by a paracentral scotoma, while another might fail to realize until questioned that he had been vaguely aware of it for some time, and yet another might continue in ignorance until the scotoma had been mapped out by charting the central field.

Diplopia, said Mr. Doggart, did not necessarily indicate ocular paresis. There might, for example, be a convergence defect associated with an anxiety state in a patient whose internal reactive function was normal in all conjunctive movements. When a patient did not complain of diplopia on his own initiative it was unwise to ask whether he had seen double. The over-analytical patient might proceed to give an account of what was nothing but a physiological or, as it had been called, an "introspective" diplopia. Defective vision suddenly arising in one eye, followed by substantial recovery within two or three weeks, was a well-known early manifestation of disseminated sclerosis. A similar lesion implicating both optic nerves behind the globes might occasion transient disturbance of vision in certain cases of pituitary or other intracranial neoplasms. Hallucinations opened up a fascinating subject. The plain man was quite convinced that he could not mix fantasy with objective events, yet the arguments against a sharp dividing line were formidable. Tricks could be played by the memory, however recent the event, as those accustomed to hear evidence given in court well knew. And at what point did legitimate clinical optimism degenerate into "facultative Nelsonism" by which latter device the surgeon could direct a blind eye on his failures and claim 100% success? He reminded his hearers of the visual aura of epilepsy, the geometrical figures which emerged at the height of a migrainous attack, and the strange images which might haunt the victims of Ménière's disease. The most elaborate hallucinations sprang from damage to the visual cortex, whether vascular, inflammatory, toxic, or traumatic.

Dr. DENIS WILLIAMS said that ophthalmologists and neurologists, as a result of their precise methods of testing visual function, were inclined to consider perception as tested in terms only of the lower visual pathways. He gave some curious examples of persons who had lost at least one-half of their total visual pathway and yet were able to "spare" or "split" their macular vision at will. Observations on the nature of macular "sparing" illustrated the effects of other related mechanisms upon the results of simple visual testing.

Dr. H. M. TRAQUAIR said that he had always been in the habit of teaching students that the eye was like a telephone receiver, with no function at all save to accept images and translate them into messages which were sent to an exchange, possibly in the area striata, and that the act of "seeing" was performed not by the eye or its connexions but by the ego. A discussion in which many strange cases of disorientation and hallucination were mentioned was contributed to by Mr. R. LINDSAY-REA, Mr. D. V. GIRI, Mr. EUGENE WOLFF, Mr. F. RIDLEY, and others.

Detachment of the Retina

Mr. C. DEE SHAPLAND read a paper on prognosis in detachment of the retina. He reviewed 155 cases (122 civilian and 33 Service) operated upon by diathermy. About two-thirds of the cases were in males. In this and other series a slight but constant tendency for the right eye to be affected rather than the left was noted. In the civilian cases a successful result in the sense of reposition continuing after twelve months was obtained in 55.8%, and in the Service cases—a younger and selected group—in 80%. Mr. Shapland said that the scales were weighted in favour of the surgeon and the patient up to the age of 50, but after 50 it was the other way about, although the oldest patient in his series—a woman of 75—showed a good result.

Prof. WEVE (Utrecht) said that his department had statistics concerning 3,000 cases operated on during the last thirty years. The cases which healed quickly and well were almost always those which were dealt with immediately. He was astonished at the number of ophthalmologists who, seeing a case of haemorrhage in the vitreous, never supposed it to be the beginning of a detachment and put the patient on the waiting list.

Mr. G. T. W. CASHELL described two cases of special interest, the first a subconjunctival rupture of the globe due to penetration by a cow's horn, and the second an aneurysmal varix of the retina. The first case showed an extensive migration of uveal pigment. Dr. W. C. SOUTER mentioned that in Aberdeenshire he had found cows responsible for sclerectomy, iridectomy, subconjunctival dislocation of the lens, total dislocation of the lens, and enucleation of the globe.

Retinal Vascular System

Dr. I. C. MICHAELSON described some research on the mode of development of the vascular system of the retina. He said that a study of the developing retina of man and other mammals had shown that vessel growth in the retina was by a process of budding from pre-existing vessels. The formation of retinal capillaries was pre-eminently a function of the retinal veins. If vein and artery were close together, growth took place initially from the side of the vein remote from the neighbouring artery. The spread of capillary growth towards an artery extended for only a certain distance, leaving finally in the definitive eye a well-marked capillary-free space around the arteries. This suggested that a factor affecting the growth of retinal blood vessels was present in the extravascular tissue of the retina and in such concentration that it differed in arterial and venous neighbourhoods, its action being predominantly on the endothelium of the veins. If the bulk of the capillary system in the retina could be considered as part of the venous system, and the arterial system as supracapillary, such dispositions had implications for the appreciation of diabetic and hypertensive retinopathy. In the former capillary disturbance was evidenced by micro-aneurysms, haemorrhages, and exudates closely associated in time with changes in the visible veins, and in the latter long-continued arterial or arteriolar changes might be present without evidence of capillary disturbance. Development showed a dividing line in the vascular system corresponding to that found in pathological processes.

A paper on "Latent Nystagmus" was presented by Mr. T. KEITH LYLE. He said that this condition was first described in 1872, and cases had been recorded by several observers, but in many such cases there had also been signs of organic disease in one or other eye, conditions which might of themselves give rise to nystagmus. In the cases he reported there was no sign of organic abnormality in either eye. He showed a film of two cases in small girls taken eight years ago, and a similar film of the same subjects taken recently.

Glaucomatous Eyes

Dr. T. L. THOMASSEN (Norway) read a paper on venous pressure in glaucomatous eyes. He showed that venous pressure, compared with bulbar pressure, is high when the ocular pressure is in an increasing phase and low when the ocular pressure is in a decreasing phase. After the instillation of pilocarpine the venous pressure falls first and the ocular pressure shortly afterwards.

Mr. J. P. F. LLOYD surveyed 45 cases of congestive glaucoma, the average time of the congestive attack being eleven days.

He wondered whether operation was justified when the eye had settled down after what might be the only crisis in a lifetime. Dr. G. I. SCOTT described the use of the Bjerrum screen in the early diagnosis and prognosis of chronic glaucoma simplex.

Prof. ARNOLD SORSBY presented a classification of unassociated dystrophies of the fundus, discussing the topographical types, varieties of reactions, and genetic behaviour. In this connexion Prof. FRANCHESCHETTI (Geneva) mentioned the remarkable familial incidence of choroiditis in certain valleys of Italian Switzerland. Other papers were by Dr. HELEN DIMSDALE and Mr. D. G. PHILLIPS on ocular palsies due to infection of nasal sinuses, Mr. EUGENE WOLFF on the conjunctival naevus, and Mr. A. G. CROSS on papilloedema in association with toxic hydrocephalus. Pictorial demonstrations were given by Dr. H. M. TRAQUAIR and Dr. J. ELLISON, and Dr. W. C. SOUTER showed a colour film of a man who had the power of everting completely one or both upper eyelids without assistance, though he did it more surely with finger pressure on the temples. The film showed the great elasticity of his facial muscles. Another event of the Congress was a clinical meeting at the Ophthalmic Institute, Central London Ophthalmic Hospital, Judd Street, when about twenty cases were shown.

STREPTOMYCIN

At a meeting of the Liverpool Medical Institution on Feb. 19, with the president, Prof. T. P. MCMURRAY in the chair, Prof. NORMAN B. CAPON opened a symposium on streptomycin.

Prof. Capon outlined the events leading up to the beginning of streptomycin trials, on behalf of the Medical Research Council, at Alder Hey Children's Hospital in February, 1947. He emphasized that treatment with streptomycin was a severe trial for the patient even though toxic effects were few, and it imposed a strain upon both medical and nursing staffs. It was clear that the prevention of spread of the disease to children and adequate provision for the care of cases of primary tuberculosis were still the most important aspects of the problem.

Dr. ROBERT HUGHES described the organization of a centre for the streptomycin treatment of tuberculous meningitis and miliary tuberculosis at the Royal Southern Hospital, Fazakerley, in September, 1947. So far 10 cases had been seen, and 5 of them had completed the course of treatment. Of these patients, one—a case of miliary tuberculosis with meningitis—had apparently been cured completely and was now perfectly well. The results in the other four cases of meningitis were unsatisfactory in varying degrees. In view of the results at Alder Hey Children's Hospital he suggested that there might be more than one type of tuberculous meningitis and that those cases associated with miliary tuberculosis might be more amenable to streptomycin than those with meningitis due to rupture of a tuberculoma. The cases treated were described in some detail. Toxic reactions to the drug had been almost invariably mild and had necessitated cessation of the treatment in one case only.

Dr. Hughes concluded by saying that streptomycin as used at present was not the complete answer to these problems. Perhaps it might be used more successfully in conjunction with other forms of chemotherapy. At the present time, too, there was not a sufficient quantity of the drug nor enough beds or staff to treat all the cases of these conditions which occurred.

Method of Treatment

Dr. R. M. TODD said that during the past twelve months 29 cases of various forms of tuberculosis were treated with streptomycin at Alder Hey Children's Hospital. The drug was given intramuscularly in doses of 0.02 g. per pound (454 g.) body weight per day in divided doses six-hourly; and also in the cases of meningitis intrathecal doses of 0.1 g. were also given daily. Intramuscular therapy was continued for an average of twelve weeks in patients who had had over four weeks' treatment. Intrathecal injections were originally continued for long periods, but experience had shown that one or two short courses of seven days' duration with an interval of fourteen days between the courses produced better results.

Four cases of miliary tuberculosis were treated and two survived; one patient was alive and well forty weeks after the onset of the disease. Four cases of tuberculous bronchopneumonia all survived and three were alive fourteen, twenty-two, and forty-six weeks after the onset of the illness. Twenty-one cases of tuberculous meningitis—with or without evidence of miliary tuberculosis or tuberculous bronchopneumonia—had been treated and seven were alive. Three of these had completed streptomycin therapy and had survived nineteen, twenty-three, and forty-six weeks after the onset of the disease. Clinically they showed no evidence of meningitis, but one patient was completely deaf. A raised protein and increased cell count were still present in the cerebrospinal fluid. These three cases had been examined by a psychiatrist, who reported that none of the children showed any evidence of moral deterioration, change of disposition, anxiety, moroseness or apathy, but in the deaf child there was some slowing of mental development not altogether accounted for by impaired hearing and hospitalization.

Toxic reactions were few. In five cases a generalized maculopapular rash was observed, and in two cases the eosinophil count was 7% and 5%. A peculiar tremor resembling that seen in cerebellar disease was observed in eight patients who received intrathecal streptomycin, but this tremor quickly disappeared. Pleocytosis in the cerebrospinal fluid was relatively common and reached 500 per c.mm. in one case. Renal complications were observed in three cases—frank blood in one case, casts and red blood cells in two cases—but there was no permanent renal damage.

Prognosis depended on: (*a*) Early diagnosis: choroidal tubercles might lead to early recognition of miliary dissemination. In two of the cases tuberculous meningitis developed while the patients were under treatment with streptomycin for tuberculous bronchopneumonia and miliary tuberculosis, and these cases were diagnosed as a result of routine cerebrospinal fluid examinations. No abnormal clinical signs were observed at the time. (*b*) Age: the prognosis was worse in children under the age of 3. (*c*) Cerebrospinal fluid changes: the presence of tubercle bacilli on more than two occasions after starting streptomycin therapy was a bad prognostic sign. (*d*) Hydrocephalus, as evidenced by skull changes and generalized muscle-wasting, carried a poor prognosis. Radiologically the miliary tubercles might disappear during treatment, although in these cases they were still visible in large numbers at necropsy.

Four cases of influenzal meningitis had been treated with intramuscular and intrathecal streptomycin. Injections were continued for from seven to ten days, the cerebrospinal fluid becoming sterile on the second or third day. Three made an uninterrupted recovery, but the fourth case developed spasticity of the left arm two weeks after discharge from hospital and subsequently died from pneumococcal meningitis.

Laboratory Control

Dr. A. C. T. VAUGHAN emphasized the necessity, in view of the ease with which resistance developed, of maintaining strict laboratory control of streptomycin treatment. With one exception, confirmed at necropsy, the tubercle bacillus had been isolated from each patient under treatment at Alder Hey Children's Hospital. An unexpected finding had been the inability to detect any increase in the resistance of the infecting organism isolated post-mortem in those who failed to respond, even when in one case treatment had lasted for sixty-six days.

Dr. C. A. ST. HILL said that streptomycin was an efficient bacteriostatic agent against the tubercle bacillus *in vitro*, but its results in the treatment of tuberculous meningitis were disappointing in many cases. These disappointments were due to a large extent to the formation of adhesions around the brain and spinal cord with consequent hydrocephalus. These adhesions might further hamper the action of the drug by burying the tubercle bacilli and thus protecting them from its influence. It would seem, therefore, that an advance in treatment might follow if some means could be found to prevent the formation of adhesions. There were a number of drugs which might be

used for this purpose, and two patients were being given heparin and streptomycin, but the effect of this treatment could not as yet be ascertained.

Dr. V. COTTON CORNWALL said he felt that the results were bound to be disappointing in a large number of cases of tuberculous meningitis. Dr. Hughes' division of meningitis into at least two groups was important, for it was in the cases associated with miliary tuberculosis that the best results had been obtained. The American literature suggested that streptomycin was often useful in recent exudative pulmonary tuberculosis, and he hoped supplies would be available soon for a trial in such cases.

At the same meeting Dr. C. ASTLEY CLARKE read a short paper on asthma.

CREDÉ'S METHOD

A meeting of the North of England Obstetrical and Gynaecological Society was held in Manchester on March 5 with the president, Mr. J. E. STACEY, in the chair.

SIR WILLIAM FLETCHER SHAW said that as a result of recent experiences in the conduct of higher examinations he had come to the opinion that ideas on what constituted Credé's method had changed. In the past he himself had taught, as he had been taught, that it was a method of applying gentle rhythmical stimulation to a sluggish uterus in the third stage to induce it to contract and so separate the placenta; only when it was contracting vigorously was it to be squeezed a little harder and the placenta delivered from the vagina by pushing the uterus gently downwards in the axis of the pelvis. Nowadays there appeared to be a widespread belief that Credé's procedure consisted essentially in extremely forceful squeezing of the uterus to promote separation of the placenta, and he therefore wished to draw attention to Credé's original description of his method (*Klinische Vorträge über Geburtshülfe*, 1853, **1**, 600):

". . . Failing natural discharge of the placenta . . . In numerous cases, without exception, successful expulsion of the placenta has been obtained within a quarter or half an hour after the birth of the child, by massage through the abdominal wall around the fundus and body of the uterus—gentle at first and gradually increasing in pressure, thus producing an artificially stimulated powerful contraction. When this is at its height I grasped the uterus so that the head lay in the palm of the hand and the fingers and thumb lay along the sides of the organ, exerting a gentle and outward pressure. In each case I felt the placenta slide out of the uterus from under my fingers with such an impetus that it was carried through to the very external genitals; or at least to the lowest parts of the vagina."

Sir William Fletcher Shaw concluded from this that Credé meant gentle massage to be used for the purpose only of inducing strong contraction of the uterine muscle, the final squeeze being intended only to push the placenta from the lower uterine segment and the vagina. If vigorous and forceful squeezing of the placenta from the fundus of the uterus was ever justified, it ought not to be associated with Credé's name. Moreover, even the method described by Credé was not original, and had been discussed by John Harvie, who in 1767 wrote:

". . . As soon as the child is committed to the care of the nurse let the accoucheur apply his hand upon the belly of the woman, which is then very loose, and he will readily feel the contracting uterus; then, having placed the flat of the hand over it, let him by a light and gentle pressure bring it downwards or towards the pubis, and he will feel the uterus sensibly contracting and then feel it so reduced in size as to be certain the placenta is expelled. By this method he will seldom have anything to do afterwards but to help it through the os externum; if even so much remains undone. . . ."

As in so many other examples in the history of medicine, the name of the originator was not associated with the disease or its treatment, but rather the name of the person who discovered it afresh at some later date.

In the discussion which followed there was general agreement that there should be no interference during the third stage of labour unless there was a clear indication for it, and that energetic squeezing and manipulation of the uterus was dangerous in that it was conducive to placental retention and shock. Many speakers said, too, that the present-day tendency was to distinguish between squeezing the fundus to promote placental separation (rightly or wrongly attributed to Credé) and expression of the already separated placenta from the lower uterine segment and vagina.

Unusual Cases

Dr. R. M. CORBET (Preston) described a case of pregnancy complicated by a large hydronephrosis.

Mr. JOHN HAMILTON (Liverpool) discussed a case in which he had successfully removed a large fibroid uterus weighing 32 lb. (14.5 kg.) from a grossly anaemic woman, and also a case of pregnancy in a bicornate uterus in which the pregnant horn had ruptured spontaneously at the eighteenth week. After removal of the ruptured horn, and of the pregnancy sac from the peritoneal cavity, the patient made a good recovery.

Miss K. LIEBERT (Manchester) described a case of post-abortal general peritonitis treated with streptomycin. A persistent and virulent peritoneal infection did not respond to sulphamezathine, penicillin, or drainage of the abdomen, but was dramatically cured by streptomycin. The organisms concerned were coliform bacilli and non-haemolytic streptococci both shown to be resistant to penicillin but sensitive to streptomycin.

POST-PARTUM HAEMORRHAGE

At a meeting of the Edinburgh Obstetrical Society on March 10, with the president, Dr. W. F. T. HAULTAIN, in the chair, a paper was presented by Dr. RICHARD DE SOLDENHOFF on haemorrhage in obstetrics.

Dr. de Soldenhoff said that 99 maternal deaths from haemorrhage had been reported to the Department of Health for Scotland in 1946–7; 67 were due to post-partum haemorrhage and some 40% of these were young primiparae. The majority of these women died in hospital, in Dr. de Soldenhoff's opinion because they had been moved to hospital following the birth of the child while suffering from post-haemorrhagic collapse.

He referred to the arrangements in the County of Ayr, where since 1937 a whole-time obstetrician had been employed by the local authority. Since that date this officer had operated an emergency domiciliary service chiefly for the resuscitation of such cases. Dr. de Soldenhoff had held this post since the autumn of 1946. The equipment used was readily transportable and included all the apparatus necessary for transfusion and for dealing with retained placenta, incomplete abortion, etc. It included blood and plasma, and the resuscitation team always carried a citrate-containing flask for the immediate replacement of a portion of the blood donation by the contribution of a relative of the patient taken at the time of transfusion. A supply of high-titre anti-CD serum was included to avoid the dangers of rhesus incompatibility.

Dr. de Soldenhoff then discussed the principles of the management of third-stage haemorrhage, post-partum haemorrhage, antepartum haemorrhage, and incomplete abortion. Immediate manual removal of the placenta was advocated for any third-stage haemorrhage of severe degree. He condemned Credé's manœuvre and advocated the vaginal pack for certain emergency cases of antepartum haemorrhage, and early curettage for incomplete abortion. He warned against the dangers of over-transfusion and advised against slavish reliance upon sphygmomanometer readings as an index of progress.

The paper was discussed by a large number of those present, including the president. It was agreed that the general use of such emergency services as those described was desirable.

Prof. Andre Dreyfus, Professor of General Biology and Dean of the Faculty of Philosophy, Science, and Letters in Sao Paulo University, is in Britain until April 23 under the auspices of the British Council. President of the Brazil-U.S.A. Cultural Union, he is also a member of the boards of cultural societies for relations with Russia, Canada, and Italy. As a geneticist working on drosophila, the purpose of his visit is to meet British geneticists. The Glasgow Royal Technical College have arranged a programme for him in Scotland. He will visit Leeds on April 18–20, and Manchester on April 20–22.

Correspondence

The Four Points

SIR,—We have reached the stage in our fight with the Government when we must have clear-cut convictions, not woolly-minded conceptions masquerading as basic ideals. The issue has become so confused that the average doctor does not know where he stands—e.g., no alternative plan exists, the N.H.S scheme is unacceptable, the present private service is out of bounds since the B.M.A. is committed to a national service, so all that is left is the N.H.S. with the four amendments (goodwill, full capitation, etc.). The question then before us is, Are these four pillars of wisdom—or should I say freedom—well and truly founded, and are they worth fighting for?

Let us examine these four pillars. What do we mean by buying and selling practices? I think most doctors mean continuing the custom exactly as it operates at present. Now, this is impossible, as it involves administrative freedom with the right to appoint one's successor, etc. Indeed, it is comparable to saying that we are willing to work a Government service if we are allowed to run it privately. It is of course an untenable position, and yet I agree it is the only basis on which buying and selling could be justified.

The "master pillar" is that concerning abolition of the basic salary. It is argued that if we are paid by capitation only we are being protected from a full-time salaried service—a very laudable objective. It is true reference would have to be made to Parliament before such a step could be taken, but note all we have gained is the protection of a Government pledged to a full-time salaried service—truly a Pyrrhic victory.

The third pillar, concerning direction, is I think very weak. Obviously the main idea is to protect doctors' being forced into undesirable areas. Actually I feel greater difficulty will be experienced in getting medical men to carry out the proposed scheme in places such as Southport, Harrogate, etc., where we are dealing with an aged and ailing population, and where 1,000 patients would probably be a full-time job. Some adjustable scheme as that envisaged in the basic salary might prove very useful.

As regards the fourth pillar—viz., right of appeal to the courts—there is undoubtedly a case that could be argued cogently, but are the terms offered doctors different from those operating in other Government departments, and has the experience gained in these other departments been such as to create uneasiness? I do not think so.

To sum up, could these four amendments be elevated to the standard of convictions strong enough to sustain a fight? If my reasoning be accepted they certainly could not, as they are mainly myths. It must not be imagined that I am anxious for a Government service; I am only anxious to clarify the rodomontade that so many doctors are indulging in under the guise of saving the profession and the public. If we agree to a national medical service at all then we must, I think, under existing Government regulations yield administrative freedom, but we should make very sure that professional freedom is established. As regards a full-time salaried service, the only protection I know of is the will of the profession to resist it no matter what Government is in control. Even a clause in the Act could be altered.

I think it is unfortunate that the issues dealt with above should have excluded so completely all light on the business side of the proposed service.—I am, etc.,

Southport. S. H. STEWART.

Choosing Successor

SIR,—I suggest that a simple way of meeting our objections to forfeiting our freedom by the ban on the sale of practices would be to allow practitioners an unfettered right to choose their successors. Our main objection to the ban is the interference with our freedom to practise where we will. If the Local Medical Committee and the Medical Practice Committees were abandoned and the above method adopted, there would be no legitimate objection to the State purchasing our practices instead of by private arrangement.—I am, etc.,

Histon, Cambs. A. E. MOORE.

Can Consultant Practice Survive?

SIR,—The consultants have been preoccupied in defending the interests of the general practitioner. Only here and there is a lone voice raised to inquire as to their future. No contracts have appeared for signature, and they are being lured into inactivity awaiting the decision of the Spens Committee. Could the Minister of Health be more pleased by any situation?

What are his aims? The consultant is in short supply. Private practice is anathema to the Labour Party. The consultant's service must be rationed and equally distributed in the Socialist ideal world. The poor must not feel that his more prosperous brother can avail himself of a better service. Under the new scheme, when specialist services are available without extra payment to one and all, can it be imagined that consulting practice as it now exists can survive? Here and there it may do. The large bulk of consultants will have to augment their private earnings—and will considerably come to rely on this source—from payment for their hospital services. If we need any indication of the scale, the L.C.C. payment of £700 a year for practically a half-time appointment may serve as a guide of a specialist's salary.

When the scheme has been in operation for a time, private consulting practice will dwindle further, and those holding such appointments will feel compelled to seek fuller employment under the authority. These duties are hardly recreational. The output expected is far from modest. Hospital appointments will probably be paid at a similar rate, and it can be easily envisaged that—in the absence of private practice—consultants with even two or three hospital appointments could not make a living in the larger centres. Herein lies the subtle process of *negative direction*—a form of economic compulsion driving the specialist out of his practice to eke out an existence in uncongenial surroundings, a servant of the new machine, painfully aware of its economic strength. That this is not imaginative, something that is now occurring will indicate.

I have knowledge of a hospital where the consultants have been required by regulations to attend for a certain number of sessions per week, so that their duties should be adequately accomplished. This hospital staff made application to the Ministry for payment—without prejudice to the future—on this sessional basis which they had voluntarily observed in the past. The Ministry have indicated that the attendances were far too numerous.

Billion dollar loans and the Marshall Plan may permit for a while longer this inflationary recklessness that beguiles the consultant into believing that payment under the new scheme is in the nature of a purloin. But the days of reckoning are numbered. Financial stringency, "mass-produced" specializing, and a tightened exchequer will make him realize that he should have thought, and thought hard, while he still had a chance to devise a way of escape.

It appears immodest to consider the financial side of the State scheme, but when it is being used as a weapon to exploit a class of professional men it calls for ventilation. We must retain: (1) freedom, and (2) security of tenure. This can only happen if we plan in unison not to expose ourselves to the possibility of economic strangulation. The general practitioner knows what he wants. It is time the consultant's demands for self-protection were formulated. The hospitals become State-owned in July. Is forgoing our salary our most vigorous protest against State servitude?—I am, etc.,

London, W.1. JOHN SOPHIAN.

Hoyland Doctors Unite

SIR,—We the undersigned, all general practitioners in adjoining districts and all having voted "No" in the recent plebiscite, have formed ourselves into a committee for the purposes of (1) mutual protection and moral support; (2) the dissemination of facts to the public as opposed to rumour and misrepresentation.

We are holding public meetings in the districts in which we practise, and able medical speakers are being invited to explain the reasons for the doctors' objections to the National Health Acts of 1946 and 1947 and to discuss the patients' angle on the National Health Service. These meetings will be non-political and as far as possible non-controversial. The audiences will

be encouraged to ask questions and the local doctors will be supported by those from the other districts concerned.

At our first committee meeting the following resolutions were passed, and submitted to those who had been unable to attend:

(1) For the next three months no transfer of National Health Insurance patients excepting those coming on to the panel for the first time or from outside districts. This resolution was passed for mutual protection against the suggestion made in some quarters that N.H.I. patients should threaten to withdraw their medical cards unless their doctor agreed to enter the National Health Service.

(2) The British Medical Association to be asked to take immediate action and not wait until July 5.

(3) No medical cards issued under the National Health Service Acts, 1946 and 1947, to be accepted by any doctor in the districts concerned.

(4) Public meetings to be held in all districts after March 17 to put the doctors' case before the patients.

We feel that if practitioners in each district or group of districts who are opposed to the Acts in their present form would join together in this way the unity of the profession would be greatly strengthened. Special attention should be given to those who may be wavering because of financial worries. It should be a case of "all for one and one for all," each practitioner helping and supporting his neighbour in every way possible.

Let us learn to have faith in ourselves and in each other, for only by presenting a united front can we hope to win the battle for professional freedom. Let all who value the ideals and traditions of medicine and who refuse to betray the medical men and women of the future join together throughout the country and cry "Halt" to the forces of totalitarianism. We shall fight and fight hard in our own area. Shall we fight alone?—We are, etc.,

B. WIGGINS, A. W. B. WIGGINS, J. AITKEN MCEWEN, J. H. FAIRCLOUGH, P. LEWIS, E. S. L. ALLOTT, M. ALLOTT, J. S. L. ALLOTT, H. N. SKELTON, J. H. RITCHIE, P. D. LESLIE, H. A. L. BANHAM, D. W. MAYMAN, H. M. MILLS, W. JARDINE, L. TAYLOR, W. G. MAXWELL, G. W. ETCHES, J. W. WHITWORTH, C. B. BALL, J. C. PICKUP, J. DICKINSON, M. F. GRENFELL.

Hoyland, Yorks.

Must the Doctor Tell?

SIR,—Although my Service numbers have only just had time to dry (8 months) I myself have had enough of direction and regulation. There is, however, one regulation that worries me now and may worry patients after July 5. I am instructed to inform my commanding officer of all second infections with venereal disease in other ranks and all first infections in the case of officers. This makes nonsense of the "confidential" advertisements one sees in civilian life, and incidentally of the Hippocratic ideal. If I refuse I am disobeying an order. If I comply I am the less a doctor. If some "sea lawyer" takes me to court for a breach of faith, am I or is the R.A.F. held responsible?

So much for my own difficulty, which has arisen through being a nationalized doctor in a nationalized force. The miner is nationalized; after July 5 the doctor is nationalized. The arguments applied to the airmen and myself will apply to doctor and miner. "The V.D. rate is high in the industry. The problem must be beaten." The doctor must inform the mine manager the miner has V.D. The logical sequence to this is to carry out "F.F.I." inspections in the nationalized industries, for if confidence is no longer to be maintained the patients will attempt to hide their condition.

I would be grateful if the eminent members of my profession would give an ethical ruling on the confidential issue and if Mr. Bevan would give his ruling on the same issue in its application to industry. It may lose him votes but it would at least be honest.

Finally, may I sympathize with the doctors' wives? My record number of signatures for one afternoon so far is 52. The clerks had to spend a long time preparing the forms for signature. The doctor's wife will now have to prepare them, for they will surely be necessary.—I am, etc.,

SERVING OFFICER.

A State Service

SIR,—I have just received my *Journal* for Feb. 7, containing an account of the consultants' meeting held on Jan. 27. I was amused by and read with some cynicism Dr. H. B. Morgan's statement that a number of services such as the Public Health Service and Colonial Medical Service were full-time and functioning satisfactorily. I can only speak of the latter and use it as a pointer of things to come under Mr. Bevan's scheme.

Does functioning satisfactorily include one director, four deputy directors, seven assistant directors, ten administrative senior officers to control 13 specialists and 109 general medical officers? Yet that is the fact stated in the latest staff list of one large colony. All 22 administrators are qualified doctors. Initiative, enterprise, ability, and skill are of far less value than a "good book." No one wants that for the United Kingdom—not even the present Minister of Health, probably. It is a fact, however, that once the administrative germ takes hold of the body medical petty bureaucracy engenders frustration, most marked among the keen clinicians, of whom there are not a few. Meanwhile clerks, both medical and lay, flourish.

Only one out of the 14 doctors from the United Kingdom working in this area would have voted for the Health Service in the recent plebiscite had they received papers in time, I understand.

For my crime of being a Civil Servant I am not allowed to sign my name to this letter under the direst of penalties. The same could easily occur at home in a full State service.—I am, etc.,

F.R.C.S., COLONIAL SERVICE.

Rural Remuneration

SIR,—As has already been noted, the proposed N.H.S. remuneration, although it *may* be adequate in industrial areas, will cause great hardship or worse to many rural practitioners. The industrial practice is closely grouped around the main surgery, to which patients have ready access by public transport. Such visiting as there is is from door to door. In the country not only can the blind, the halt, the aged, and the infants not come to the surgery owing to hills, distance, lack of transport, or stress of weather, but when a visit to them is made arrival at the gate may mean a further climb of 50 or 100 feet of long steep path. A recent census over two months showed a ratio of 4.1 visits to every surgery attendance.

My partner and I live four miles apart and serve some 25 square miles of broken country. One of us has patients on and across a rapid tidal estuary. In the winter there is no ferry, which means getting out one's own boat and rowing. During the last six months 33 such visits were made. On two days gales made anything but visual communication impossible. On a time-energy basis each such visit equals six or more ordinary ones. As this harbour work is within a mile's radius of the surgery no mileage is claimable under N.H.I. Moreover, mileage allowance as at present calculated is a farce. On a group of patients in a hamlet two miles away on a main road it may be reasonable, but the more inaccessible patients never present their cards until ill. Mileage should be paid on an item-of-service basis, as is now quite satisfactorily done by the Admiralty, Army, and other departments.

The total population in this area is probably under 3,000 and it seems impossible on the terms offered that we shall not be down several hundred pounds on our present income. It should be borne in mind too that we are "at risk" for the whole population of the area, not as in a city with the risk spread over many practitioners. That work will be greatly increased under N.H.S. is generally admitted—for example, extra visits solely for the purposes of certification (e.g., mild infectious diseases which must not come to the surgery and would normally be seen once or not at all). Further, whereas N.H.I deals with patients healthy enough to be at work, N.H.S. will include a big percentage of primarily sick and chronic cases who must be visited.

Personally I think that the remuneration so far offered, however it is distributed, will be quite inadequate for good work, though possibly enough for mass-produced certification in a city. Unfortunately the legislators of all parties when making

regulations think always of straight streets of numbered houses, whether it be health, housing, rations, traffic, or whatever. Many of the difficulties resulting from the application of these regulations to country conditions would be laughable if they were not so wasteful and exasperating.—I am, etc.,

Newton Ferrers, S. Devon. W. F. BENSTED-SMITH.

Plea for Compromise

SIR,—I am and always have been a convinced opponent of a comprehensive national health service. Here the operative word is "comprehensive," as Government service can be perfectly satisfying. I have spent nearly 30 years in it and should know what I am talking about. But what made such service satisfying is the fact that nearly 95% of the profession were outside it. If an individual felt himself aggrieved by the conditions of his service, he could always retire and go into civil practice. If the grievance was a general one, the B.M.A. could, and did on occasion with great effect, turn off the supply at the source. Once the service becomes comprehensive both these safeguards vanish. For the dissatisfied individual there is no remedy but to emigrate, as a certain Member cynically remarked in the House; for the generality there is no refuge.

It is therefore with real apprehension that I see looming before us the prospect of such a comprehensive service. It is possible that resistance at an earlier stage might have avoided this. The Beveridge Report contained in germ all the most objectionable features of the present Act. A firm stand then might have reduced the whole scheme to its proper proportions of an extension of the N.H.I. Act. A very grave error was made when, instead of submitting an alternative scheme of our own, we agreed to negotiate on the Government proposals only, as by so doing we admitted the principle of direct Ministerial control. The acceptance of the 100% principle practically made the State our sole paymaster and deprived us of the strength an independent income would have given us.

But it is no use crying over spilt milk; we must now face the grim prospect of a Government-controlled service which we have accepted *in toto* except for some of the details as to how that control is to be exercised. And this is surely the time for some give and take on both sides. The right of appeal to the courts the Minister may well yield us. It will rarely be exercised. We on our side might yield on the question of the ownership of our practices. It is, I think, an illusion that this will render us more helpless. The power of the purse which we have yielded is so strong that it can make little difference.

The remaining two points are matters in which concessions could be made on both sides. The right to refuse permission to settle in an over-doctored district is harmless; it prevents squatting. The right to direct men into unpopular districts is objectionable. Men should be coaxed, not driven into such districts. By "coaxed" I mean such inducements as higher emoluments and the right to a move after a certain number of years. The danger about a universal basic salary is that it easily leads to a salaried service. This danger would disappear if it were restricted to men setting up independent practice for the first time and allowed gradually to disappear. Here I should like to adopt a suggestion made to me that the initial salary should be at least double the present figure and taper off in succeeding years until it vanished altogether in, say, five years. This would give the maximum help when it was most needed and act as an incentive to work. I make no claim that my suggestions are a solution of our difficulties, but I do make a plea that that genius for compromise for which this country is rightly famed may be allowed to prevail before further embitterment.—I am, etc.,

Andover, Hants. J. A. BALCK-FOOTE.

Morality of the State

SIR,—Dr. Stephen Taylor, though he had outlined his views quite clearly (March 6, p. 463), does not yet seem to understand why we are disturbed. Yet out of his own mouth we have the answer. Under item 4 of his letter he states that an amending Act would give us no protection whatever. In other words, no guarantee by those who represent the State is worth much.

Surely, Sir, this is the crux of the issue. The historian knows that history teems with broken pledges; these are broken as freely, probably more so, by the State than by individuals. In fact the individual, even if he would, is often bound to his promise by laws imposed by the State. Socialists cannot have it both ways. They cannot elevate the State above the individual, permit it to break all the rules of manners and ethics, and then expect us to give it trust, loyalty, and respect.

This issue, so often evaded by those charged with the defence of morality, is of fundamental importance at a time when worse tyrannies than Socialism are just over the water. I do not think many of us could feel happy under the Act until some more definite safeguards against abuse of power by the State are forthcoming. It may not be possible to bind any future government to anything, but we should be well aware that tyranny may be practised by the so-called democracies as much as by Fascists, Communists, and absolute monarchs.

If we accept that the State should be as moral in its actions as the individual, how does Dr. Taylor regard the threat to which general practitioners are now exposed? The Minister says in effect, "Come into the Service or lose your money. I will not buy your practice and you may not sell to another." Is this morally defensible? Will Dr. Taylor tell us in these columns if it is?

The Act, as it stands, is misleading to the public, since many of the things published in the prospectus are not there, nor can they be for years to come. Can Dr. Taylor wonder then that we feel great moral indignation, not only because of the injustice with which we are threatened but because of the fraud at which we are asked to connive? If Dr. Taylor detests intimidation and coercion, as do all those with a sense of fair play, I suggest that he considers these points. He might also like to make clear to the Surrey Federation of Trades Councils that their proposed questionary to doctors is unethical and contrary to the spirit of true Socialism.—I am, etc.,

Hadley Wood, Herts. G. C. PETHER.

Refinancing the Service

SIR,—My letter "Financing the Service" (Feb. 14, p. 311) has been justified rather sooner than I expected by the revised estimates of the cost of the N.H.S. which have now been issued, and the miscalculations can be seen to be even more gross than I anticipated.

The sum of £87 million for hospital and specialist service has now been raised to £134 million, exposing an original error of 54%. The sum of £45 million for the G.P., optical, pharmaceutical, and dental service has been stepped up to £60 million, an error of 33⅓%.

Such casual manipulation of "meaningless symbols" by the back-room boys of Whitehall cannot be condoned. Or were the underestimates deliberately designed to facilitate the passage of the Bill through Parliament? Let us hope, as taxpayers if not as doctors, that the watchdogs of the Treasury will be among the first to claim dental benefit and be fitted with new acrylic-resin, or preferably stainless-steel, teeth.—I am, etc.,

Bournemouth. T. R. AYNSLEY.

Methods of Fighting

SIR,—I am a realist, and as I sat at the Representative Meeting on March 17 I felt it was unfortunate that there were not more in the medical profession, and particularly so on the Council. Most of us agree that this comprehensive service is non-political and was introduced by a coalition government for purposes of certification essential for the successful running of the social insurance scheme rather than for a crying need for improved treatment of the sick.

A motion was proposed that doctors should attend the sick after July 5, but no certificates other than for infectious diseases, lunacy, and death should be issued. Dr. Guy Dain, Chairman of Council, said he was amazed that such a motion should be brought forward, and he was supported by Dr. Gregg that to withhold certificates was a paltry act. The motion was rejected by your representatives.

As a realist, I am amazed that the Council should ask the members of the B.M.A. for the far from paltry sum of £100 as a first contribution for a fight for which they have obviously

no stomach. An earlier speaker pointed out that, if you are to have a fight, someone must get hurt. In our fight the Council are determined that it shall not be the patient; we can rely on Mr. Bevan to look after himself; and so I will give you one guess who will get hurt. When the Council announce on what lines they intend to fight I shall decide whether to subscribe or not, but if they continue their present methods they will certainly lose the fight and our money.—I am, etc.,

Camberley. LESLIE HARTLEY.

The Alternative

SIR,—The *Journal* (*Supplement*, March 27, p. 56) reports Dr. E. A. Gregg, whose position lends authority to his voice, as saying, "Our alternative is the National Health Service scheme with the changes in it for which we have asked and of which you are all aware." If this statement represents the full content of our opposition to his scheme Mr. Bevan may well sit back content in the belief that he will soon see a landslide in his favour just as did another very adroit, very intelligent Welsh politician who manœuvred the profession into an untenable position a generation ago. It must be obvious to anyone who has followed your correspondence columns that many who voted against the Service did so from motives which had little connexion with the four so-called principles. I venture to suggest that a great number would feel chagrined and frustrated if Mr. Bevan were to yield on all four points and thus leave us with no option but to agree to serve his ends.

I cannot believe that I am alone in opposing the scheme because it appears to be a gigantic fraud, a vast confidence trick about to be perpetrated on the British public. We know that those who issue fraudulent company prospectuses are in danger of finding themselves behind prison walls, in company with practitioners of the confidence trick, but at least their victims have a chance to say "No" to such gentry; whereas everyone will be legally obliged to pay for a service which Mr. Bevan knows full well must fall far short of his promises for many years, even if he has the enthusiastic co-operation of the profession from the outset. But the Minister goes farther than that and announces, through his mouthpiece Dr. Stephen Taylor, that even with one-third of the necessary staff he intends to set up his service on the appointed day.

Dr. Gregg seems either to hold an entirely different view as to the value of the Service under existing circumstances or to believe that this aspect is of no concern to us. If he can tell me of any real value to the community which the Service will possess I shall be very grateful to him, but if he cannot he is in effect declaring that, if we retain the right to sell our practices, are not forced to accept salaries, are free to practise where we will, and may appeal to the courts if *illegally* dismissed, then we will be the willing accomplices and accessories of this gigantic immorality. If the suggested interpretation of Dr. Gregg's statement is fair and accurate there seems to be no very obvious reason for surprise that Press, public, and Parliament are predominantly hostile, or at least distrustful, not of the Minister but of us.—I am, etc.,

Launceston, Cornwall. DONALD M. O'CONNOR.

The Doctor–Patient Relationship

SIR,—The fight for freedom by our colleagues at home is being watched with keen interest out here, but it is a matter of some comment that no stress has been laid on what is after all the crux of the situation—namely, the destruction by the Act of the doctor–patient relationship. I take the titles of letters on p. 311 of your issue of Feb. 14: Alternative to Salary, Financing the Service, Compensation, Remuneration in the N.H.S., Goodwill in Practices—all dealing with the material aspect of our fight, and a side of it in which the general public—whose good will we deserve and must have—is either not interested, or which it is apt to misconstrue.

We, however, know from the experience of medicine in existing services that one of the first things a doctor tends to lose is that sympathy, understanding of the individual patient, and knowledge of and interest in his environment which taken together make up the doctor–patient relationship and which instil in the patient that confidence which is so often three-quarters of the battle.

I feel we are not doing justice to our cause by harping so much on the material angle. If we insist on conditions which preserve this relationship everything else follows automatically, for all conditions which will or may turn us into Civil Servants would have to be withdrawn. Is it too late, even now, for a big publicity effort directed especially to the general public and explaining and stressing this most vital point?—I am, etc.,

Nairobi, Kenya. KEITH DUFF.

A Clear Reply

SIR,—Already one is being asked, unofficially of course, "How do we stand with reference to the new scheme and with you, Doctor?" What is one to say, and should not you, Sir, give a lead so that we may speak with one voice? Let us be clear and loud in our reply, which one would suggest should be in the following terms: We cannot say anything definite, *but* if the scheme is modified, as we hope it will be, to remove all our objections, then there should be no difficulty.

Is this enough, or should one explain further? And will this be enough when the patient is advised by the Ministry to ask his doctor whether or no he is coming into the scheme? No evasive action will then suffice with a public which has been led to believe that the Act is coming into force on July 5 whether the doctors agree or not.

Whether we like the method or not we shall require to adopt the method of the present Government and put our position clearly to the public by poster, leaflet, and radio. At least every practitioner should have a card which he can place in his waiting-room which states clearly his position regarding July 5.—I am, etc.,

London, N.6 W. LEES TEMPLETON.

Implementing the Vote

SIR,—It is surely time for those of us who voted No in the plebiscite to devise means for implementing our vote. Which of us is serenely happy at the prospect of disposing of the Minister's contract or deed of acceptance when the time comes? Is there not some element of doubt in our minds about the other fellow? We all have much at stake and we shall need a lot of reassurance. We do not like the scheme, but we want to remain solvent. There is to be a central fund, but we are not beggars. We may despise the timid, but the timid may well outnumber the fearless. I submit this proposition to all who voted No—to the fearless and the timid, counting myself among the latter. I should add that it is not my own idea, having been outlined originally by a colleague at a meeting of the local branch of the B.M.A.

The suggestion is that the B.M.A. should act as agent for the individual practitioners. Each practitioner should forward the contract or deed of acceptance or whatever may be the instrument selected by the Minister to the B.M.A. with instructions such as the following:

I am reluctant to enter this scheme but I am not prepared to forfeit my capital and possibly the greater part of my income for an indefinite period without the assurance that the majority of the profession is prepared to do likewise. If you are satisfied that such a clear majority is attained, I wish to be associated with it. But if it is not attained, I wish to accept service in the scheme, with regret. You should inform the Minister or his representatives accordingly.

The word "majority" should be clearly defined beforehand, and I have never seen any quarrel with the original figure for such a majority, which was, I believe, 63%. I trust that some such arrangement may be organized and adequately advertised before any one of us is faced with that contract paper with only a Thomas as counsellor.—I am, etc.,

Loughborough, Leics. R. E. RAINEY.

Foresight

SIR,—Would you allow me to say with how much pleasure (not unmixed with a little pain, be it said) I read your correspondence in these days? The pleasure goes without any more stressing; the pain is due to the almost contemptuous silence which met my letter in your columns (*Supplement*, Dec. 2, 1944, p. 134), when not a pen was lifted in support of the views expressed in it. The subject was the Coalition Government's

White Paper. I imagine that one of the reasons why I suffered neglect was that most of your present-day correspondents were still in the karyokinetic stages of their medico-political development. I am glad to think they have now passed the early stages of dentition, for some of them *can* bite ! But, Sir, why ask for more than the fundamental requirements enumerated in the White Paper above quoted ?—I am, etc.,

London, S.W.3. A. R. EATES.

Assistant Dispensers in N.H.S.

SIR,—I am from time to time asked what is to be the position of assistant dispensers under the new Health Service, and shall be grateful if you will allow me, through your columns, to clarify the position in so far as this is at present possible. The Act lays down that "nothing in this Act shall interfere with the rights and privileges conferred by the Apothecaries Act, 1815, upon any person qualified by that Act to act as an assistant to any apothecary in compounding and dispensing medicines." With the taking over of the hospitals it is anticipated that the staffs will continue in their existing posts, and it is thought that many health centres will employ holders of the Assistant's Certificate. It cannot yet be known how many doctors will continue to dispense their own medicines, but at the present time the demand for assistant dispensers far exceeds the supply.—I am, etc.,

The Worshipful Society of Apothecaries of London. ERNEST BUSBY, Clerk.

Iron in Anaemia

SIR,—With reference to the question and answer on iron in anaemia (March 27, p. 625), we agree from our own experience that there is no advantage in adding manganese or other trace elements. Iron seems to be specific in this disease.

We have been concerned for a long time with the problem of refractory microcytic hypochromic anaemias. Even when due allowance is made for complications such as neoplasm, infection, and continued haemorrhage, and when concurrent deficiencies of vitamins, thyroid, etc., have been corrected, they have formed a not inconsiderable proportion of the total. Such patients appear unable to absorb adequate quantities of iron, while an additional group of patients are unable to tolerate iron preparation when given orally. In a much larger number of cases the response to oral iron falls short of expectations.

The problem, therefore, is one of introducing sufficient iron into the body in a form free from the complications of local pain and toxic reactions. Once introduced, iron-deficiency anaemia appears to utilize it quantitatively. We have made many trials of different types of iron compounds parenterally, both by the intramuscular and the intravenous routes, but all the intramuscular preparations tried proved to be too painful. On the other hand an intravenous iron-sucrose complex, similar to the saccharated iron used by J. A. Nissim (*Lancet*, 1947, 2, 49), but having constant therapeutic and chemical characteristics in routine sterilization, has given entirely satisfactory results with freedom from reactions in the day-to-day out-patient treatment of 55 cases of iron-deficiency anaemias during the past twelve months. It has also proved invaluable in the experimental study of iron metabolism.

The clinical results and studies on iron metabolism, using this complex, are now in preparation for publication. Using this preparation the treatment of the average patient with iron-deficiency anaemia can be completed in 10 out-patient visits without fear of reactions, provided that a simple system of increasing the dosage is adopted. The injections present no special difficulties after a short initial experience, and no follow-on venous lavage is ordinarily required. Many of the clinical results are as dramatic as the response of pernicious anaemia in relapse to full doses of parenteral liver. In all cases of iron-deficiency anaemia the anaemia was relieved fully.—We are, etc.,

Manchester. H. G. B. SLACK, JOHN F. WILKINSON.

Human Chorionic Gonadotrophin

SIR,—In the annotation on this subject (April 3, p. 650) attention is drawn to observations of Brown and Bradburg (*Amer. J. Obstet. Gynec.*, 1947, **53**, 749) of the effect of human chorionic gonadotrophin on the menstrual cycle of women, and the conclusion is reached that their findings strengthen the suggestion that chronic gonadotrophin prolongs the activity of a pre-existing and functioning corpus luteum, but does not by itself induce ovulation or initiate luteal activity. The further inference was drawn "that it should be used when it is desired to enhance already established but deficient luteal activity. . . ."

That it would appear to be unwise to accept without considerable reserve either of these conclusions may be deduced from the findings in two cases of hydatidiform mole which I have recently investigated. The Friedman test was positive at dilutions of 1 in 10 and 1 in 100 respectively (10 ml. urine being the standard quantity injected), indicating the presence of considerable quantities of chorionic gonadotrophin (not less than 20,000 and 200,000 I.U. per litre respectively), but in both cases the urinary pregnanediol excretion was nil when estimated on five occasions. If one accepts the urinary pregnanediol level as reflecting the blood progesterone concentration, the inescapable conclusion is that in these cases abnormally large amounts of chorionic gonadotrophin were incapable of maintaining the activity—and it may be wise to emphasize activity rather than morphology—of established corpora lutea.

There is a further inference to be drawn from these observations, namely that the placental tissue responsible for the elaboration of chorionic gonadotrophin cannot be the same as that which, in the second and third trimesters of pregnancy, secretes progesterone.—I am, etc.,

London, W.C.1. G. I. M. SWYER.

Posterior Pituitary and Labour

SIR,—Dr. Mavis Gunther's letter (March 20, p. 567) recording her observations on the escape of milk during the contractions of labour are most interesting. Though pregnancy should inhibit the lactating processes, lactation does continue in spite of the large amount of oestrogens being produced. But it is usual to find that if this is the case prolactin has continued to be secreted because of suckling. It would be therefore interesting to know when this terminated in actual fact.

Many mothers even though gravid continue for various reasons to suckle till term, and therefore, in theory, milk should in these cases be present in the breasts at the onset of labour. The myo-epithelium—the basket cells that surround the alveoli—because of their contractibility, and provoked by the posterior pituitary extract, can be responsible for the expulsion of the contained milk, and this is what Dr. Gunther observed. The visual demonstration of this expulsion coinciding with each uterine contraction, and the knowledge that the former is due to posterior pituitary extract, is highly suggestive that the uterine contractions were identically produced.—I am, etc.,

London, W.1. JOHN SOPHIAN.

BAL and Lead Poisoning

SIR,—The article by Dr. N. R. W. Simpson (March 20, p. 545) adds another link to the lengthening chain of evidence that 2:3 dimercaptopropanol is effective in the treatment of chronic gold poisoning. The curative action of BAL on the toxic effects of gold in man runs counter to the experimental findings in acute toxicity studies in mice. Graham and Hood (1947) found that BAL, 40 mg. per kg., given intraperitoneally to groups of white mice increased the lethality of sodium aurothiomalate also given intraperitoneally immediately before the BAL. The mode of action of BAL on acute gold poisoning in animals and chronic gold poisoning in man is obviously different.

Similarly Braun, Lusky, and Calvery (1946) working with rabbits, and Graham and Hood (1947) working with mice, have shown that BAL has a deleterious effect on animals acutely poisoned with lead. It does *not* follow that BAL will be ineffective in acute or chronic lead poisoning in man. This point should be tested clinically as soon as possible, since the treatment of lead poisoning at present is not entirely satisfactory.—I am, etc.,

Glasgow. JAMES D. P. GRAHAM.

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Disk Lesions and Osteopathy

SIR,—Dr. G. Macdonald's partisan letter (April 3, p. 663) really cannot be allowed to stand unchallenged. A. T. Still (the founder of osteopathy) postulated that *all* diseases arose from pressure on arteries and nerves as the result of vertebral displacements. If medical research has led to the recognition of spinal disk protrusion, and if this is now claimed as the vindication of osteopathy, it must prove the opposite of Dr. Macdonald's contention. Surely it shows that the whole of osteopathic doctrine, except in that small particular, is false.—I am, etc.,

London, W.1. JAMES H. CYRIAX.

Intervertebral Disk Lesions

SIR,—I was interested in the letter by Dr. J. Donaldson Craig and Mr. A. W. Lipmann-Kessel (March 20, p. 570) concerning sciatica produced by prolapsed intervertebral disks. They state that the pain produced by stimulating the fifth lumbar interspinous ligament is clinically and subjectively indistinguishable from that occurring spontaneously in an L5-S1 disk lesion, and also that sciatic pain might be regarded as a deep segmental pain due to joint disturbance.

I would suggest at the present time that we are in danger of considering that every case of sciatica must be caused by direct pressure of a displaced disk on a nerve root, thus causing direct pressure pain. It is true that in some cases where operative exploration is undertaken for sciatica the surgeon fails to see a disk prolapse, and yet to his pleasure the patient appears cured, at any rate for some time, of the distressing sciatic pain. Possibly the mere exposure of the dural sac and the traction of it in exploring the disks is sufficient to tear down adhesions in that area. Recently I dealt with a case that illustrates well the points brought out by Dr. Donaldson Craig and Mr. Lipmann-Kessel in their letter.

A well-built young man, aged 28, was referred to me at Fleet Hospital, Hampshire, by Dr. Sharkey on account of pain in the back and sciatica of five months' duration, following a fall on to his back at football. Diagnosing a prolapsed disk causing moderate pressure, for a further four months I carried out the so-called old-fashioned treatments for sciatica—namely, diathermy applied to the back and leg, stretching of the nerve, and manipulation of the spine. Immobilization both in bed and in a plaster spinal jacket was tried, all to no effect. Finally I decided to explore the spinal cord. After removing the ligamentum flavum between the 4th and 5th laminae, and the 5th lamina, I found no prolapse of the 4th disk. On proceeding, however, to remove the ligamentum flavum from the 5th lamina to the 1st sacral, with a view to removing the sacral lamina and exploring the 5th disk, I found that there was a local adhesion of the posterior aspect of the dura to one point on the flaval ligament, just at the level of the sacral lamina. On passing a hook around the adhesion to determine its size and desirability of cutting, it was noted that traction on it produced contractions of the posterior leg muscles. Further investigation showed that one of the roots of the corda equina was also adherent in the adhesion. The adhesion was freed from the ligament and resected off the underlying root, and the dural hole carefully sutured. No prolapse of the 5th disk was found. To my joy the next day the patient reported that he had completely lost his sciatic pain, and after a normal convalescence he returned to his job as a schoolteacher, standing, and riding a bicycle to school. He has had no return of backache or sciatica.

Such a case would bear out some of the early views held that backache and sciatica may be caused by adhesions of the soft tissues to the cord and roots rather than always being due to disk pressure, which appears to be the modern trend of thought.—I am, etc.,

London, W.1. G. O. TIPPETT.

Bone Conduction in Otosclerosis

SIR,—I would like to refer to the letter by Mr. W. H. B. Magauran (March 20, p. 569) concerning air and bone conduction in otosclerosis. It has been known for some time now that improvement of hearing by both air and bone conduction occurs in the unoperated ear in a certain number of cases—but not by any means all—following the fenestration operation, but this improvement is never permanent. In fact in over 500 fenestrations I have not one case of sustained improvement by air or bone conduction over six months in the unoperated ear, though improvement be fully maintained in the operated ear.

I feel bound to confess my amazement that anyone practising the fenestration operation to-day should rely upon inaccurate tuning-fork tests—and the one fork of the least importance at that, namely 256—for selection of suitable cases. Mr. Magauran states that "bone conduction . . . was found to be lengthened by a *few* seconds and to be reduced by *about* 50% on the left mastoid bone." I cannot help feeling that if adequate audiometric analysis had been carried out before the operation both ears may have been found suitable for the operation and the patient would not have had to rely on the result of the first operation to determine whether the second ear would respond to the fenestration operation also.

I could not agree more with Mr. R. Scott Stevenson's letter (March 27, p. 618) in regard to the need for a careful, sober, and dispassionate estimation of the results of the fenestration operation for otosclerosis. I would like to reiterate the plea that I made in the *Post-Graduate Medical Journal* (November, 1947) for the institution of most careful records of the pre-operative examination, details of the actual operative technique, and post-operative records at intervals of one month, three months, six months, and then yearly for ten years. In addition to these records a questionnaire should be answered yearly by the patients regarding the state of the result from their own point of view.

It is advisable that this operation should not be performed sporadically, but only by those who are willing to take time and pains necessary to develop an irreproachable operative technique, and who will undertake the complete after-treatment either by themselves or by an assistant specially trained for this purpose. Those otologists regularly practising this operation under these conditions should in my opinion compare their results from time to time, especially in relation to the technique of the operation, for it is beyond doubt that those employing the best technique obtain the best results. It is inexpedient to come to conclusions of the value of the fenestration operation based on the results of those only occasionally performing it.—I am, etc.,

London, W.1 E. R. GARNETT PASSE.

SIR,—Mr. W. H. B. Magauran (March 20, p. 569) can only have seen an abstract of the paper which I read to the Royal Academy of Medicine in Ireland on "Bone Conduction in Otosclerosis," which no doubt accounts for a misconception about one of its main points.

In a study of cases before and after the fenestration operation I showed that, after omitting those cases in which pre-operative masked bone conduction was normal and those cases in which no improvement in air conduction took place, the acuity of hearing for masked bone conduction in the operated ear was increased in 90% of cases. There was no alteration of masked bone conduction in the unoperated ear, and in fact the unoperated ears were used as controls to show that the alteration of bone conduction in the operated ears was a genuine improvement. Mr. Magauran's finding of a "considerable lengthening of bone conduction in the unoperated ear" is directly contrary to my findings, and strongly suggests that the operated ear was inadequately masked during the test. Without adequate masking of the untested ear, bone-conduction tests in otosclerosis may be quite misleading. I have never seen the hearing of the unoperated ear altered in any way, either for air or bone conduction; and indeed it is inconceivable that an operation on one ear could affect the working of the opposite one. Such a result can only be explained as an error in testing, either on the part of the patient or the examiner.

There is one further point. In assessing the suitability of a case of otosclerosis for the fenestration operation, bone-conduction tests with a 256 tuning fork are quite valueless. These tests must be performed at 512, 1024, and 2048 cycles per second. Normal bone conduction is often found at 256, when there is severe loss in the higher frequencies. Furthermore, neither tuning forks nor conversation voice tests can be used for quantitative estimation of the degree of deafness without introducing errors so large as to make the results of little value. If the results are to be expressed quantitatively audiometric measurement must be used.—I am, etc.,

Dublin. R. R. WOODS.

Prevention of Post-operative Thrombosis

SIR,—I should like to make comment on certain points in Mr. Hamilton Bailey's article (March 27, p. 594). In that article he emphasizes the importance of early detection of phlebothrombosis—importance which cannot be overstressed. He then proceeds to remark that the goal of prevention of phlebothrombosis cannot be reached at the present time save in a few clinics with special facilities. While perfection is a goal which is never reached in human circles, there can be no justification for the underlying suggestion that something very close to prevention of phlebothrombosis cannot be reached. I base my reasons for this statement on our observations in a Department of Health for Scotland Hospital at Ballochmyle, Ayrshire.

Towards the end of 1946 strenuous endeavours were commenced to institute a campaign in the surgical side of the hospital against post-operative phlebothrombosis and pulmonary embolism. The cases under treatment were general surgical, gynaecological, and ear, nose, and throat. In the first six months of that campaign our efforts were directed at instructing the junior medical staff, the nursing staff, and the physiotherapists in the early diagnosis of phlebothrombosis. Great endeavours were made to combat venous stasis by activity in bed, the abandoning of Fowler's position, increasingly early rising, and post-operative breathing exercises. During this period 671 operations were performed. Eight of these patients were diagnosed as developing thrombosis and were treated with heparin and/or dicoumarin, and in none of them did a fatal embolism occur. There were five cases of sudden fatal pulmonary embolism in which phlebothrombosis had not been diagnosed previously.

In the following twelve months an impressive difference was seen. 1,622 operations were performed, with nine cases of phlebothrombosis and no fatal post-operative pulmonary embolisms. These cases were all treated with heparin, and in no case was venous ligation or thrombectomy carried out. If these figures are compared with those quoted by Bauer (*Lancet*, 1946, **1**, 447) with reference to the pre-anticoagulant era, we find that post-operative thrombosis occurred to one patient in every 180, as against an expected rate of one in 60. Further, fatal pulmonary embolism occurred in no patients out of 1,622, as against an expected rate of one in 360. Perhaps this might be regarded as "an iota of evidence" that pulmonary embolism is less frequent in at least one hospital without special facilities than it was "ten, fifteen, or twenty years ago."

There can be no doubt that femoral thrombectomy is not called for save in a relatively advanced case of phlebothrombosis, and even in these cases satisfactory results accrue from heparinization. The risks of producing pulmonary embolisms during thrombectomy are surely considerably greater than the risks of fatal pulmonary embolism under adequate heparin therapy. One could hardly expect any better success than Bauer reports, namely three fatal pulmonary embolisms in 16,495 cases.

Mr. Bailey refers to the "unbridled use of expensive drugs." The average cost of treating a hospital patient with heparin for a recent and early phlebothrombosis is about £14. When prolonged morbidity or actual loss of life is being averted such a sum of money can scarcely be regarded as excessive even from a purely economic point of view. I am convinced that any surgical unit which is determined to reduce its rate of post-operative phlebothrombosis and pulmonary embolism can do so by adequate training within the unit and by the use of heparin when a case of phlebothrombosis is diagnosed.—I am, etc.,

Mauchline, Ayrshire. GAVIN J. CLELAND.

Clinical Value of E.S.R.

SIR,—Dr. J. Robertson Sinton's article (Feb. 28, p. 391) on the erythrocyte sedimentation rate was of great interest, but there are some points in his article to which I should like to draw attention. He mentions that the investigation was carried out at laboratory temperatures varying from 12° C. to 25° C. This is a wide range and surely tends to invalidate some of his figures. It has been shown by Westergren,[1] Ham and Curtis,[2] and others that a rise in temperature increases the rate of sedimentation; this, however, has been denied by Weingarten,[3] who refutes the general statement that sedimentation rates are higher in warmer temperatures.

Table I shows readings taken simultaneously at 15.6° C. (60° F.) and 21.1° C. (70° F.) in a recent very small series of cases. It will be noted that the temperature range is smaller than that of Dr. Sinton's, and the differences would be greater still with his wider range. The method used was the standard Westergren with 200 mm. tube, 1.6 ml. of blood, and 0.4 ml. of sodium citrate, and the readings were taken at the end of one hour.

TABLE I

Disease	15·6° C.	21·1° C.
Normal	8	12
"	6	10
Hodgkin's disease	88	108
Rheumatic fever	30	35
Pregnancy	11	15
Tonsillitis	15	22
"	12	18
"	20	30
"	17	26

An additional possible inaccuracy in the Westergren technique using sodium citrate is the measurement of the latter and the blood. To show the difference between a 1:4 and 1:3 ratio of blood to sodium citrate a few sedimentation rates were carried out at a constant temperature using these two dilutions, and the results are shown in tabular form below.

TABLE II

Disease	Ratio of Blood to Sodium Citrate	
	1:4	1:3
Normal	8	5
"	6	4
Rheumatic fever	30	22
" "	35	24
Pregnancy	13	7
"	15	10
Tuberculous synovitis	32	22
Tonsillitis	12	8
"	16	11
"	14	9

An error of 0.1 to 0.2 ml. in measuring the blood or citrate may be sufficient to alter the ratio from 1:4 to 1:3—such an error may easily arise with the type of syringe usually used.

A final factor influencing the rate is the inclination of the tube. Westergren, Wintrobe and Landsberg,[4] Ponder,[5] and others all emphasize the necessity for the tube to be vertical; this is difficult to achieve. Moreover Ham and Curtis[2] have shown that only 5° from the vertical produces a substantial error. A method of ensuring a vertical tube and also a constant temperature is that advocated by Rogers.[6] In this the tube forms its own plumb-line, is plugged at its lower end, and is suspended in a large jar containing water at the desired temperature. The method is rapid, and the results may be directly compared—this is especially important in serial cases where the sedimentation rate is used as a guide to progress and in which normally a winter reading might be too low and a summer reading too high.—I am, etc.,

London, S.W.3. M. C. JOSEPH.

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Medicine in a Planned Economy

SIR,—Finding myself very much in agreement with the trend of thought in the article by Dr. Ff. Roberts (March 13, p. 485) I cannot help adding the plea to all doctors in hospital or practice to be more thoughtful in their selection of, and demand for, specialized tests and laboratory examinations.

A friend who works in a large hospital in this city, where the patients are largely drawn from the upper age limits of the population, commented acidly to me on this very point the other day. As he puts it: "Subjecting an aged (75) arteriosclerotic with cerebral thrombosis to a full blood examination, lumbar puncture, and other examinations" may be an exaggeration of the actual state of affairs, but there is no doubt that a lot of tests (useless so far as the future of the patients is concerned) are being done. The minds of the younger members

of the profession are muddled by the ever increasing amount of scientific knowledge, and in their endeavour to keep up with and to apply that knowledge they are apt to get lost in a maze of often meaningless figures. The older clinicians in their endeavour to follow suit get lost even more easily. The language at the average residency table (to an outsider at least) would puzzle even an Egyptologist trying to unravel the mysterious message on some ancient papyrus. The nonsense being banded about on many lips in many spheres of life is becoming intolerable.

In school the new entrant is often measured by pseudo-scientific psychological tests. My own child was refused admission to school here because she did not reach up to the standard demanded by these tests. In fact, she was refused admission because she was "dull and backward." By other means I pressed her admission into this school—to find that the same "dull and backward" child shines now at or near the top of her class (no doubt a class of "backward" children). And so the nonsense goes round and round, using the words of the famous song. It is time some of us took a more sensible line, and Dr. Roberts is to be congratulated in reminding us this time of our failings.—I am, etc.,

Edinburgh. K. I. E. MACLEOD.

The Treatment of Hyperidrosis

SIR,—Mr. H. A. Haxton (April 3, p. 636) in his opening paragraph states that essential hyperidrosis is seen in those parts of the body which are affected by mental or emotional sweating. He later goes on to say that the cause in most cases is unknown, and appears to discredit the theory of abnormal psychic disturbances, substantiating this by reference to a case in which the onset was before the age of ten years. As the genesis of most emotional disturbances occurs in infancy this would not appear to be a valid argument against the theory. It is to be noted also that in Case 5 the symptoms prevented the patient from dancing and in Case 9 occurred when the patient was warm or embarrassed—both of these would suggest an abnormal emotional background.

I have recently observed a patient, 34 years of age, in whom hyperidrosis of the hands commenced suddenly after a febrile illness, and in the early stages occurred only when the patient was playing cards, but later at frequent and apparently unconnected times. Varied local treatments were tried without success. About the same time the patient complained of praecordial pain and dyspeptic symptoms; these progressed to a frank anxiety state. Psycho-analysis revealed a deep emotional conflict of which the patient had been completely unaware. As the analysis proceeded the frequency of the hyperidrosis became less and less, and the patient was able to connect its occurrence with his conflict.

I would suggest that the majority of cases of hyperidrosis should be classified as psychosomatic, and in all cases where an organic cause is not found adequate psychological investigation should be carried out before submitting the patient to an operation, which although it may relieve his immediate symptoms will leave the basic cause unresolved.—I am, etc.,

London, W.2. JOHN H. L. CONWAY-HUGHES.

Pulmonary Embolism

SIR,—I am grateful to Mr. Norman C. Lake (March 20, p. 569) for giving some details of the necropsy findings in two of his cases; but I doubt whether he is right in blaming Nature for being preposterous, as it seems probable that the necropsy examinations were not full enough to justify his conclusions. In his first case Mr. Lake states that clot was projecting into the superior vena cava from the azygos vein. This, I would submit, may refute rather than support his suggestion that the fatal embolus originated from this source. In the second case the fact that the clot was found projecting into the iliac veins (I take it that this refers to the internal iliac veins) is again no proof that this was the source of the embolus.

Lest Mr. Lake should consider me unduly disputatious, may I add a few further remarks?

1. It must not be presumed that *any* veins containing ante-mortem thrombus at necropsy were the site of origin of a fatal embolus unless (*a*) the veins of the legs have been carefully dissected, and (*b*) the loose clots in the heart and lungs can be shown to "fit" the veins from which they have allegedly originated. Where these steps are taken there are very few cases in which an embolus can be proved to have arisen from those unusual sites which (in the absence of adequate necropsy examination) were formerly accepted as the source of some emboli.

2. In the ordinary necropsy, where examination rarely extends below the groins, it is frequently the empty rather than the clotted veins in which we should be most interested, and unless the leg veins are explored it is unjustifiable to incriminate the only veins that happen to have been examined.

3. Ante-mortem thrombosis is frequently extensive, and I have commonly found thrombosis at other sites when the veins of the lower limb were unquestionably the source of a fatal embolus. In the absence of full necropsy the wrong veins would have been incriminated.

I never doubted that Mr. Lake was fully aware of the importance of early movements nor did I think that he should have devoted much more space to the question of pulmonary embolus. I do, however, consider that his conclusions about these cases are unjustified and that it is singularly unfortunate that the little he did say should concern these two cases.

The purpose of my last letter was to challenge a too prevalent defeatist attitude to this subject of embolus. I fully appreciate that active movements alone will not prevent thrombosis, and it is for this reason that I would advocate daily examination of the legs and the "abortive" treatment of any thrombosis with heparin. If it be believed that thrombosis usually arises from the abdominal wall or from haemorrhoids then there is little possibility of early diagnosis, and still less opportunity of selecting suitable subjects for anticoagulant therapy. This erroneous belief is disproved by the results of thorough necropsy examination.—I am, etc.,

Radlett, Herts. REGINALD S. MURLEY.

Prostatectomy for Retention of Urine

SIR,—In the article by Mr. G. A. Bagot Walters on immediate prostatectomy for retention (April 3, p. 638) I read that as recently as 1945 an excellent authority favourably compares the patient with acute retention operated on from the street and the bedded patient who has undergone "sulpha, catheter, anticipatory" treatment.

Now I think the comparison may be misleading. An acute retention with benign prostatic enlargement may frequently not demand prostatectomy, whereas a patient catheterized for a few days or weeks may not need any debilitating "sulpha" treatment and certainly no confinement to bed with attendant loss of appetite and anxiety. In this rural area I remember twenty years ago how difficult it was to catheterize for more than a few days without having the depressing increasingly dirty condition of the urine brought to one's notice. From the time I commenced giving "metramine," one capsule daily, to mildly disinfect and make blue the urine I have not failed to keep it free from unpleasant odour or cloudiness, even after catheterizing for some weeks in cottage conditions.

When one's experience is limited, it is unfortunate that in hospital the only case of acute retention I saw decompressed with a lumbar puncture needle suprapubically, died. In practice, where catheterization has been imperative and possible I have always spent an hour in emptying the distended bladder—with very frequent interruptions in the flow—while engaging the patient in conversation and deprecating all efforts to assist in expulsion.

Of my few elderly prostatic patients I give, as illustrations of what may happen, (1) a case refusing a second-stage operation, satisfied to live and get about with a permanent and leaking suprapubic drainage emptying into a milk bottle suspended by tape from the neck of the patient; (2) two cases, both over 70 years, who after catheterization for some weeks resumed normal micturition for several years; (3) one case who had weeks of catheter life, with "metramine" administration, without recovery of natural function, and who submitted to immediate and uneventful prostatectomy by a general surgeon; (4) one patient who died from a heart attack a few days after suprapubic drainage had been established by an eminent genito-urinary surgeon; (5) one sturdy patient admitted to hospital without catheterization but with considerable residual urine, as shown by percussion, who died four days later from urinary suppression after suprapubic drainage; (6) one patient, aged 80 years, who in 1947 had acute retention through unavoidable

delay in micturition. This case gave a history of nocturnal frequency over many years. Owing to having an ailing wife he refused operation; catheterized daily for three weeks, and with metramine, he resumed natural micturition, getting up once nightly, and to-day is living a very active life.

I write these particulars for the rural practitioner who may be interested in the common things of life.—I am, etc.,

Haydon Bridge, Northumberland. RICHARD BELL.

Malignant Syphilis

SIR,—The report headed "A Fatal Case of 'Malignant' Syphilis" by Drs. Robert Lees and William Fowler (March 6, p. 451) is of considerable interest. Although the occurrence of rupial lesions and mucous patches together with penile sores and a positive Wassermann reaction makes the diagnosis of syphilis extremely likely, it seems nevertheless a pity that apparently no attempt was made to demonstrate *Spirochaeta pallida* in genital or other lesions.

It would be interesting too to learn whether any Herxheimer reaction was noted on commencing treatment. No doubt the small initial dosage of penicillin was designed to prevent therapeutic shock. Yet recent American work would suggest that the risk of therapeutic shock is no greater with large initial doses of penicillin than it is with small ones.[1] Moreover, in the apparent absence of involvement of vital structures surely it would have been more logical to have begun treatment with large doses of penicillin plus a potent arsenical, plus a soluble bismuth or mercurial salt, in order to combat an apparently fulminating infection. A fulminating meningococcal septicaemia, for example, is regarded as requiring heavier dosage with sulphonamides than would a case of average severity.

Isolation of the spirochaete would also have made possible an attempt to determine by means of rabbit inoculation whether the infection was caused by a drug-fast strain such as that reported on by Beerman and Severac,[2] whilst microhistological investigation might have determined the condition of the smaller and medium vasculature, as vascular causes have been held responsible for destructive changes both in early and late syphilis.[3]

Lastly, occasional batches of penicillin are found to be therapeutically ineffective. Was the particular batch used tested and proved to be therapeutically active on another patient, or otherwise assayed for penicillin content?—I am, etc.,

Liverpool. C. D. ALERGANT.

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Thiouracil in Thyrotoxic Heart Disease

SIR,—I feel that Dr. W. E. Clarke (March 27, p. 597) has been unlucky in his experience of treating thyrotoxic cardiovascular disease with thiouracil, since in many hospitals satisfactory results are being obtained. I have before me the notes of twelve consecutive cases of thyrotoxicosis that I have treated during the past year. Six had cardiac failure, and three of these auricular fibrillation. The degree of failure seemed more severe than in Dr. Clarke's cases, and the initial pulse rate was never below 120. In all six cases the cardiac symptoms were entirely relieved by thiouracil, the fibrillation reverting to normal rhythm, which has persisted. The condition of the patients, on a small maintenance dose, is excellent. Surgery was offered but was refused in every case, though in fairness it must be said that patients referred to a physician using thiouracil are in some sense selected. One woman, for example, had refused to go to hospital for years, until she was told that a non-operative treatment was available.

As regards the frequency of heart disease in thyrotoxicosis I would question the statement that few cases now develop cardiac complications. It would be safer to say that the thyrotoxic element in heart disease is often overlooked. No assessment of the incidence of thyrotoxic heart disease is valuable unless the age of the patients is taken into account. Of my twelve cases, those whose hearts failed were all over 44, while the others were all under 41 save one. I would suggest that in the older patient cardiac failure may occur quite early in the illness.

Dr. Clarke does not give details of dosage, and it is possible that the drug fever and granulopenia which caused him to resort to surgery were associated with a higher dose than is used to-day. I have not used more than 200 mg. of the methyl derivative three times a day in the cases of which I have spoken. A mild granulopenia should not cause treatment to be given up. Of his other failures, neurosis seems an odd reason for surgical intervention, and malignant exophthalmos is seen after thryroidectomy. Of my own cases there are two in whom I should like to see the goitre removed for cosmetic reasons, but the patients will not hear of it.

Either thyroidectomy or thiouracil can control the symptoms of thyrotoxicosis with minimal risks if properly used. Operation will always be favoured by those who regard the goitre as the *fons et origo mali*, but it is surely more correct to look upon it as a link in a disordered metabolic process. From the practical point of view patients to whom the alternatives are fairly presented will decide for themselves. It behoves us, by a careful follow-up, to see that we are in a position to present the facts.—I am, etc.,

Cheam, Surrey. C. P. PETCH.

The Danger of Intubation under Trichlorethylene

SIR,—Dr. W. M. Maidlow (March 13, p. 523) rightly emphasizes the dangers of too early intubation. Intubation under trichlorethylene is often unsatisfactory, as the laryngeal and tracheal reflexes in the uncocainized patient are still active, and indeed under these conditions may be dangerous. This danger exists under *all* anaesthetics. Other fatalities have been reported, occurring immediately after intubation, when agents other than trichlorethylene have been employed. Early intubation can be necessary and is sometimes vital, but I feel there is a strong tendency to intubate in lighter and lighter planes of anaesthesia, more because of impatience or to satisfy a personal vanity than any other reason. Intubation should be reserved for those occasions which require it, and then only after adequate preparation of the patient.

Reflex spasm of all muscles of respiration occurs after early intubation, but I would hesitate to use curare in this condition, which always responds excellently to an increase in the anaesthetic concentration.—I am, etc.,

London, W.1. G. E. HALE ENDERBY.

"Myanesin" as a Relaxant in Children

SIR,—With reference to the article by Dr. W. H. Armstrong Davison (March 20, p. 544) I think the use of "myanesin" combined with general anaesthesia for Ramstedt's operation is a retrograde step. The operation can be carried out quite satisfactorily using local anaesthesia with procaine, and I feel that the use of a drug about which there is still a diversity of opinion is unjustifiable in these cases.

Dr. Armstrong Davison states that the objections to local anaesthesia are that the technique is time-consuming and relaxation is unsatisfactory. The time factor should not influence an anaesthetist where the safety of his patient is at stake. The degree of relaxation obtained with local anaesthesia is quite adequate for the operation, which can usually be performed using 10 ml. of 0.5% procaine, which is well within the safety limits of the drug.—I am, etc.,

London, W.C.1. J. N. T. HUTTON.

Naming Drugs

SIR,—In reviews and abstracts of arucles appearing in foreign periodicals it frequently happens that a familiar drug escapes recognition by being referred to under a name not in use in this country. A case in point was the reference to mandelamine (methenamine mandelate) in your leading article "Streptomycin Bactericidal" (Feb. 28, p. 399). Mandelamine is, of course, an American proprietary preparation, but it will not be readily apparent to everyone that methenamine is the name used in the United States Pharmacopoeia to describe the substance known in this country as hexamine ("urotropine"). Other examples, perhaps better known because more frequently encountered, but which still cause some confusion, are epinephrine (adrena-

line) and neostigmine ("prostigmin"). There are, of course, many others.

In the absence of an international nomenclature it would appear highly desirable that wherever possible English names should be given in parenthesis in such cases. The additional burden imposed upon reviewers and abstracters would be only a little greater than that demanded by your most excellent custom of inserting metric equivalents to follow quantities expressed in British units, and would, I am convinced, be more than outweighed by the resultant increase in the usefulness of the material.

Much of the trouble is caused by manufacturers of proprietary drugs who, having an organization on both sides of the Atlantic, choose two names for a particular substance and use one in the United States and the other over here. There may be good reasons for this course, but it would help very considerably if one name could be selected for use in both countries.—I am, etc.,

J. B. LLOYD,
Chief Pharmacist.

Manchester Royal Infirmary.

The Lazy Eye

SIR,—Having been engaged in school clinic work for over 35 years I have to admit I am much disappointed. At Tottenham alone I see some 2,000 children in a year, and in many cases have to deplore the child growing up with an amblyopic eye.

There are many reasons for this. We may get the child too late. At nine or ten the value of occlusion is rather problematical, and if strabismus starts at a very early age and we see the child when it starts school there may be no fixation in the squinting eye and occlusion is useless. Furthermore, without intelligent co-operation from the parents it is often impossible to overcome the amblyopia, and attendances are apt to be irregular. Again it is deplorable that children are not taught to recognize the letters much under seven, which makes the estimation of visual acuity difficult. And one must remember that a squinting eye may get quite straight and yet remain amblyopic.

If a gross error, say 5D of astigmatism, be corrected at the age of two, much better visual acuity will ultimately be attained than in a case in which glasses were only worn several years later, and this applies much more in cases of anisometropia. The difficulty is spotting the error at so early an age, and this can only be done objectively. A gross error can be recognized in a few seconds with the retinoscopy mirror, and I have endeavoured to get the school medical officer to do so whenever possible, and refer doubtful cases to me. Also if I find two or more children in a family with defective sight I ask to see all the younger ones, and in this way secure better vision and often forestall a squint.

One should remember that a visual acuity of 6/6 is compatible with 5D of hypermetropia, but such a case can be recognized undilated. With 6/9 in each eye, a small error, and no symptoms, it is often inadvisable to order glasses as it may be difficult to get the child to wear them.—I am, etc.,

T. W. LETCHWORTH.

London, W.1.

POINTS FROM LETTERS

Contracting Out of National Insurance

Mr. JOHN B. S. JAY (Ayr) writes: Dr. W. Reginald Wilson's timely letter leads me to mention that a petition entitled "National Insurance, the Right to Contract Out" may be had for 1d. from K.R.P. Publications, Ltd., 7, Victoria Street, Liverpool. It sets forth some little-known facts about national insurance, including facts about its origins and manner of introduction.

Two Masters

Dr. M. LUDLAM (Edinburgh) writes: I have had so little experience of general practice that it is with some hesitation that I take up my pen to criticize others who can write with so much more authority. I feel that the dilemma which so many feel they will suffer in the proposed Health Service due to their loyalty being divided between government and patient is a dilemma in which a conscientious practitioner must even now often find himself. An insurance doctor, if he is to do his duty, must always bear in mind that he has a double loyalty. If his patient comes first and last then of course the company or friendly society will become bankrupt. It is regrettable that many, perhaps most, panel patients do not appreciate the basic principles of insurance, nor have they any idea of the cost of the medicines with which they are supplied. When I suggest to a patient that a certain medicine is expensive and that someone has had to pay for it, or that a certificate of incapacity for work is not a ticket-of-leave-with-pocket-money, the reaction varies from indifference to righteous indignation. So I suggest that as far as this matter is concerned our grievance is not that we shall have to serve two masters but rather that one of them may be too demanding.

Easy Money

Dr. C. E. GOLDSBOROUGH (Rothwell Haigh, nr. Leeds) writes: One of the best arguments I have met against basic salary is that there is no legal obstacle to the wife of Dr. X (who is, say, in the public health service), by virtue of her also being a doctor, putting up a brass plate now at her residence, and in four months' time qualifying for a life pension of £6 per week. This is no theoretical surmise.

Certificate Madness

Dr. W. B. JAMISON (Belfast) writes: The other day I signed an official-looking certificate designed, I think, by the Board of Trade to prove that my patient had not grown a normal leg to replace his artificial one since the date of his last certificate. This disability entitles him to a few extra clothing coupons. Yesterday I signed another so that my patient might be entitled to use the lift in the building in which she is employed in a domestic capacity. The lift attendant had informed her that only those employees in possession of a doctor's certificate were allowed to use the lift.

Aetiology of the Common Cold

Dr. FRANK CORT (Whitburn, Durham) writes: I read with interest the remarks of Dr. C. H. Andrewes (March 20, p. 559) at the meeting of the Medical Society of London and the discussion on the aetiology of the common cold. In particular I notice Dr. Andrewes said that bringing together virus and patient was not enough to produce a cold, that it is possible that a great many people carried the aetiological agent of a cold in their noses until something happened to upset the balance between host and parasite and a cold followed.

In my view the onset of a common cold is entirely due to oedema of the local mucous membranes by the onset of sudden histamine activity in the patient, and within 24–36 hours the oedematous mucous membranes have become invaded by secondary invaders producing mucopurulent catarrh, which is so often the stage when we see it in our patients.

If this theory is correct then it is logical that the administration of any antihistamine agent will abort a common cold if given in the early stage of oedema before secondary invasion has occurred. I have tried this with various antihistamine agents, and in all cases in which I have been fortunate enough to treat the case in this early oedematous stage the cold has been aborted in a few hours, and no mucopurulent stage has supervened. . . .

I am now working on the theory that if a virus is responsible then it acts by rendering active histamine bodies produced by sudden changes of protein metabolism. . . . I should feel honoured to have Dr. Andrewes' opinions on my remarks and experiences.

Prevention of Prickly Heat

Dr. PERCY E. TURNER (Thames Ditton, Surrey) writes: Very soon after commencing work in Travancore in 1901 I became aware of the local custom of a regular "oil bath," and sometimes saw the process being carried out by a faithful wife. The husband's skin was first of all freely anointed with some coco-nut or other oil well rubbed on, and after he had sat in the sun for say twenty minutes, letting it well soak in, the excess was then washed off with some vegetable soap and hot water, and I came to associate the spotless velvety appearance of the skin, as described by Lieut.-Col C. H. Barber (Feb. 14, p. 317) with this custom. But at first I did not appreciate the due order of things, and tried the oil application on my own skin *after* bathing (as believed by Col. Barber for Sikhs), the result being an immediate outbreak of acute prickliness. Then I came to appreciate that the oil on the wet, hot skin was not the best technique, and so reversed the order of things, setting it out as follows in my *Tropical Medical Manual* (p. 12, 3rd edition, 1942, The Salvation Army, I.H.Q.).

"The sodden condition of the skin produced by much sweating, with perhaps an accentuated microbic activity, leads in many people to a very troublesome condition known as prickly heat. Yet it will be noticed that the natives of the country, although also freely sweating, practically never suffer from this trouble. The secret appears to be in their addiction to the free use of oil to the skin, and it will be found that the following to a moderate extent of this same custom is of very great service in keeping those from Western lands also free in this respect. Either olive oil, fresh coco-nut oil, or some similar vegetable oil, or a mixture of one of these with an eighth part of lanoline, will make a suitable application, which should be rubbed well in to the skin when dry and the excess presently washed off with warm water and a mild soap, leaving the deep parts of the skin soft and supple and free from irritation."

Solubility of Pills

Dr. ROBERT DORMER (Chingford, London, E.4) writes: The public call compressed tablets "pills," and swallow them intact. I have had as a result of this practice considerable personal experience of these tablets passing through the digestive tract completely unaltered. It would appear from this that all solid drugs which are not very readily soluble should be dispensed with abundant pill excipient, or as powders in readily soluble capsules. . . .

Desiccated Stomach Substance

G.L. writes: Personal and family experience of treatment with preparations of desiccated stomach over a period of seventeen years makes me feel that a few practical hints to those who prescribe and to those who have to take this unpleasant product may not come amiss. The best way to take it appears to be in cold water, the colder the better. Stir the powder into the cold water quickly and dash it off. Take another mouthful of cold water after it. It does not mix easily and some is apt to remain on the glass, but do not spend time trying to make it mix. An ounce of water should carry about 10 g. of the powder. The water should be put in the glass first and the powder added.

A new tin is always more objectionable. The unpleasant taste and smell will diminish a little if the tin is left open for a night. . . .

Recurrent Dislocation of the Shoulder

Mr. D. W. C. GAWNE (Hong Kong) writes: This sign has been present in five cases of recurrent dislocation of the shoulder joint and in three of recurrent subluxation. It is elicited with the patient either standing or lying down.

The fingers of the hands are interlocked and the hands rested, palms down, upon the vertex of the head, or palms resting in the nape of the neck. The arms are held in a natural and comfortable position (elbows 30 degrees forward). Standing in front of the patient, a hollowing out of the axilla with a relative prominence of the head of the humerus will be seen on the affected side. On palpation the humeral head will be clearly felt, with little interposed between it and the skin. A hollow surrounds the head, into which the fingers can be sunk without difficulty, particularly laterally and inferiorly. On the normal side a thick muscular belly is interposed between the head of the humerus and the skin, which can be rolled from side to side on the front of the head.

The sign is due to a wasting of the oblique portion of the subscapularis, which arises from the dorsum and lateral margin of the scapula and runs upwards in front of the head of the humerus when the arm is held in this position.

Chest Examination

Dr. T. J. O'CONNELL (Sligo) writes: Sometimes difficulty is experienced in getting a patient to co-operate when examining his chest with a stethoscope. This can frequently be overcome by the simple process of distending a paper bag and getting the patient to hold it over his mouth and nose. After a short time the breathing becomes deep and regular. This is an old cure for hiccup, and for a number of years I have found it useful when examining chests. Perhaps the method may be of use to others, especially when examining the chests of children and mental patients.

Zest in Old Age

Dr. G. C. ADENEY (Ditchling, Sussex) writes: The review by Dr. F. Parkes Weber of Dr. Vischer's *Old Age* (March 13, p. 501) will have been welcomed by many medical men and women who, like myself, are approaching their own senescence. His presentation of old age as a period which should, and will, make its own indispensable contribution to the human process—a process, indeed, of which the real meaning has not yet been disclosed—is itself a contribution that will serve to stir us up and set us thinking.

His concluding translation of a fine fragment of fifth-century script tempts me to offer in exchange the last stanza of Longfellow's *Morituri Salutamus*, q.v.

Christian Medical Group

Dr. NEVILLE BRADLEY, Hon. Secretary, Medical Prayer Union (South End Cottage, Turville Heath, Henley-on-Thames), writes: Founded over 50 years ago the Medical Prayer Union has sought in various ways to foster fellowship among Christian doctors. It has organized the Missionary Breakfast at the Annual B.M.A. Meetings and another for medical students every year in the spring. It would seem from many points of view that the time is opportune to link medical men and women in some more effective way in order to promote and maintain a distinctive Christian witness in what is tending to become an increasingly secularized and nationalized service and to foster and support the medical missionary activities of the Church at home and overseas. Will any interested send me their suggestions regarding such a "Christian Medical Group"?

Obituary

JAMES McINTOSH, M.D., LL.D.

Dr. James McIntosh who died at Aberdeen on April 5 at the age of 65, had been professor of pathology in the University of London and director of the Bland-Sutton Institute of Pathology at the Middlesex Hospital since 1920. His brilliant attainments and many activities had made his name familiar wherever medical research is in progress.

James McIntosh was educated at Robert Gordons College, Aberdeen, and at the University of Aberdeen, where he graduated M.B., Ch.B. in 1905 and gained the M.D. with the highest honours in 1908. The first part of his career was devoted almost exclusively to research in various subjects, until in 1920, at the age of 37, he was appointed professor of pathology in the University of London and director of the Bland-Sutton Institute of Pathology at the Middlesex Hospital. After taking up this position his main interest was still in research, but administrative, teaching, and routine pathological duties made their claims on his energies. He worked on many different pathological problems, but there can be traced four main threads which ran through the whole of his research career. These four threads were his work on syphilis, on anaerobic bacteria, on chemotherapy, and on virus diseases.

His study of syphilis dated from his earliest research work under Levaditi at the Pasteur Institute, Paris, where he held an Alexander Anderson Scholarship from 1905 to 1907. It was continued at Aberdeen, where he held a Carnegie Research Scholarship, and at the London Hospital from 1910 onwards. This period was one of great activity on this subject on the Continent and was marked by the introduction of salvarsan. At the London Hospital he worked under William Bulloch, to whom he expressed lifelong gratitude for the training he had given him in bacteriology. It was here that he first collaborated with Paul Fildes, and so began a long and fruitful partnership. Their work was concerned with the chemotherapy of syphilis and also with perfecting the technique of the Wassermann reaction. The technique devised by them at this time remained for many years the standard method of carrying out the Wassermann reaction.

McIntosh's researches on anaerobic bacteria commenced at the London Hospital, again in collaboration with Paul Fildes, and were continued by McIntosh working alone during the first world war. The results of this work were embodied in a Special Report to the Medical Research Committee in 1917, a publication which for long constituted the standard work on these infections. This work was continued, and further researches in this direction proved of considerable value in the second world war, when McIntosh was a member of the War Wounds Committee of the Medical Research Council.

His interest in chemotherapy also started early in his research career at the London Hospital, where he was working on the chemotherapy of syphilis with particular regard to the solubility and mode of action of the substances used. Fildes and he at this time noted the production of drug-resistant strains of micro-organisms. This work was continued later in connexion with the newly discovered sulphonamides in conjunction with Lionel Whitby and with the old partnership renewed when Fildes was installed in the Middlesex Hospital.

McIntosh first became interested in virus diseases when in his early years at the Pasteur Institute he investigated the infective agent of acute anterior poliomyelitis. This work was resumed at the London Hospital after the first world war in association with Hubert Turnbull. In 1921 Turnbull and McIntosh gave the first description of encephalo-myelitis occurring after vaccination, and after his appointment to the Bland-Sutton Institute of Pathology McIntosh continued his studies of virus diseases of the central nervous system. This subject formed the basis of his presidential address to the Section of Pathology of the Royal Society of Medicine in 1928. McIntosh consistently upheld the view that the lesions of post-vaccinial encephalo-myelitis were directly due to neural infection with the virus of vaccinia. This view was opposed by many of his colleagues, and for long he ploughed a lonely furrow in this respect. It was not until many years later that

his view was accepted as correct by the majority of his colleagues. In more recent years he was entrusted by the Ministry of Health with the task of investigating the occurrence of cases of encephalo-myelitis during the war.

He was a confirmed believer in the possibility of virus infection being the principal factor in the production of malignant disease and did a considerable amount of work on virus infections bearing this aspect in mind. This continued for many years, and may be said to have culminated in his key experiment in which he showed that tumours induced by chemical carcinogens could be propagated by means of cell-free filtrates. The importance of this experiment has not been completely realized even yet, although it is beginning to attract more attention both in this country and on the other side of the Atlantic. It may well prove to have established factors of fundamental importance in the aetiology of cancer. This work constituted his chief interest for the last few years of his life and has been the subject of numerous papers. At the time of his death he was still deeply interested in this side of his work, which he was exploring with the aid of the high-speed centrifuge and of the electron microscope.

In general the most outstanding features of his contributions to research were his ability to strike at the root of a problem and to design experiments which would throw light on the solution. What amounted almost to mechanical genius stood him in good stead, as did his ability to maintain a thread running throughout the whole of his work, and he made use of advances in other sciences which would have a bearing on his own immediate problems. His wide interests and reading in a large number of different subjects enabled him to make valuable use of knowledge which at first might appear unconnected with the problems of pathology.

Outside his activities in the Middlesex Hospital he gave his services freely for the benefit of pathological science. For many years he acted as treasurer of the Pathological Society of Great Britain and Ireland and was its representative on the Library Committee of the Pathology Section of the Royal Society of Medicine. He also did a considerable amount of work for the Pathological and Bacteriological Laboratory Assistants' Association. He acted as examiner to the Universities of London, Cambridge, and Manchester, and for the Conjoint Board. He was a senior member of the Medical Research Club, in which he took a deep interest and to which he communicated a number of papers.

Naturally of a shy and retiring disposition, McIntosh would yet fight strongly for what he believed to be right, and he possessed a very wide circle of friends. His work was characterized by vision, enthusiasm, and perseverance, and his personal attributes of charm, sympathy, and understanding endeared him to his colleagues and gained him the loyalty of his assistants. He requires no other monument than the record of the additions to medical knowledge made by himself personally and by the Institute which he so wisely guided for twenty-eight years.

EDWARD DEANESLY, M.D., F.R.C.S.

Edward Deanesly, who died on March 31 at the age of 82, made an outstanding contribution to the advancement of medicine and in particular of surgical practice in the Midlands. He was born at Wincanton, Somerset, in 1866, the second son of a wine merchant of that town. He was educated at King's School, Bruton, and at University College, London. He graduated B.Sc. in 1886, and in the following year took his M.B. with first-class honours in forensic medicine. In 1888 he proceeded M.D., and in 1891 he took the F.R.C.S. Deanesly held the posts of house-surgeon, obstetrical officer, and house-physician at University College, which at that time boasted a brilliant staff. On the medical side Deanesly enjoyed the teaching of Bastian, Sidney Ringer, William Gowers, and Thomas Barlow, and on the surgical side of Marcus Beck, Bilton Pollard, Rickman Godlee, and Victor Horsley.

In 1893 Deanesly was appointed house-surgeon to the Wolverhampton and Staffordshire General Hospital, and from then until his retirement in 1931 his work was bound up with that of the hospital. He early recognized the importance, particularly in an industrial population, of the proper treatment of wounds, especially of the hands, and on relinquishing his resident post in 1895 in order to enter general practice in Wolverhampton he accepted the newly created post of honorary casualty officer. His few years in general practice enabled Deanesly to gain a thorough knowledge of the early stages of surgical disorders, and he himself always considered them to have added enormously to his judgment and efficiency as a surgeon. In 1891 he was appointed assistant surgeon, and finally full honorary surgeon to the hospital.

There was no branch of surgical work, except ophthalmic surgery, in which Deanesly was not at home. His published work included articles on hernia, prostatectomy, cerebellar abscess, the surgery of the renal tract, and on abdominal pain. In his later years he devoted much time to abdominal surgery, especially the treatment of gastric ulcer. Deanesly himself regarded his work on the surgery of the kidneys and ureters as his most important contribution to medicine. He was the first to describe the difference between ruptures of the urethra caused by direct violence and those caused by fractures of the pelvis. Possibly more important was the technique which he developed in the treatment of recent wounds. Deanesly never allowed himself to be diverted into an increasingly elaborate aseptic technique. Himself a pupil of Christopher Heath and personally acquainted with Lawson Tait and Jordan Lloyd, he knew the brilliant results obtained by these surgeons. Early in his career he began to treat the lacerated wounds produced by factory or street accidents by dissecting out, after proper cleansing, the whole surface of the wound however deep, including all tissue too damaged to recover; he then closed the wound without stitches by a firm absorbent dressing and left it undisturbed for at least a week. This practice had become his routine and was taught to all his house-surgeons in the early 'nineties.

The Royal Hospital, Wolverhampton, is a standing monument to Deanesly; when he joined, its staff was recruited from general practitioners working in the town. Deanesly saw that for a hospital to attain to the first rank its staff must include a proportion of consultants and specialists. He persuaded the board of management to adopt the then almost unheard-of step of offering financial inducement to men of promise to come on to the honorary staff. He recognized the importance of the application of pathology in medical practice, and it was he who persuaded the board to build the nucleus of the present pathological department, which was opened by Sir Clifford Albutt in 1914 and of which Prof. William Boyd, now of the University of Toronto, was the first head.

Deanesly was one of the original members of the Surgical Union, now the Provincial Surgical Club, founded by the late Lord Moynihan. With this Society he visited Berlin, Paris, Rome, Vienna, and many other Continental centres of surgery. Before the work of the hospital took up the whole of his time Deanesly took an active part in the civic life of Wolverhampton. He was elected a member of the Town Council in 1901, and served on the education committee; he resigned in 1917, it is usually supposed to escape being made mayor. He was appointed a justice of the peace in 1918.

By nature a Conservative and a traditionalist, Deanesly never closed his mind to new ideas or ways of thought; his principle was to test all things and to cleave fast to that which is good, but before accepting it he required clear demonstration that a new way or idea actually was good. He hated cant, and his forthright personality made him impatient of minds less clear and less honest than his own. His mordant tongue and gift of sustained irony, combined with an impressive delivery, made him a stimulating if somewhat alarming speaker on public occasions. In private his quick wit, never better displayed than over the dessert and wine at his own table and those of his friends, always assured fruitful conversation. He read widely and deeply, particularly in philosophy and history, and to the end of his life maintained his interest in the classics.

On retirement from active practice Deanesly was appointed a vice-president of the Royal Hospital; he took up his residence at Cheltenham, but shortly after the outbreak of the second world war moved to Llanbedr, Merionethshire, where he died. His widow, daughter of the late Alderman John Marston, of Wolverhampton, survives him, together with two sons and three daughters.—S. C. D.

H. M. STRATFORD, F.R.C.S.Ed.

Howard Stratford died very suddenly early on Good Friday at his home in Burwash, East Sussex. Although he was known to have suffered for some time from heart attacks his death came as a shock to his many friends.

Howard Martin Stratford, who was born at Cirencester in 1876, was educated privately and later at schools in Norfolk and Gloucester. Brought up by his uncle, Dr. Drinkwater, of Bicester, he acquired early in life his love for horses and dogs. After his student days at Aberystwyth University and at Oxford he entered King's College Hospital, where, after qualifying in 1899, he acted as house-surgeon to Mr. Boyce Barrow. Interested in ear, nose, and throat work, Stratford later became Registrar at the Royal Ear Hospital in Dean Street and at the Central London Ear, Nose and Throat Hospital. He also held house appointments at the London Lock Hospital, Hereford Infirmary, Colchester Hospital, and the Western General Dispensary, Marylebone. Later, after spending some time in Assam, on a tea plantation, he returned to England and started in practice in Wimbledon, remaining there for only a year or two. After taking the Edinburgh F.R.C.S. in 1913 he settled in Phillimore Place, Kensington, where he remained until his retirement in 1938. Up to 1914 he also had an office in the City, where he worked for insurance companies. Already a Territorial, he joined the R.A.M.C. on the outbreak of war, serving in France, Salonika, Egypt, and Palestine, for the most part in field ambulances.

Dr. Stratford was medical officer to the Post Office in Kensington. He was a staunch B.M.A. man and had been honorary secretary and chairman of the Kensington Division. He was on the Council for a time and had also been president of the Metropolitan Counties Branch. As a representative of the Kensington Division for ten years he attended many annual meetings. An old member of the West London Medico-Chirurgical Society, Stratford had been honorary secretary and president. He was also a keen supporter of the Society of Members of the Royal College of Surgeons, of which he was also president for a time. He attended regularly the annual meetings of fellows and members and frequently spoke there, as he did at most Council meetings of the B.M.A. His last speech was three weeks ago at Hastings, where he voiced his views strongly regarding the National Health Service Act. He took an intense interest in medical politics. He married in 1907 Miss Sybil Gould, of Hampstead. To his widow and three sons who survive him our sympathy is extended.

Stratford was a warm-hearted and generous friend. He was not a very ready speaker, and never pushed his opinions; but all his many friends realized that when he did speak he talked good sense and was worth listening to. He had a sunny smile and, though he certainly did not wear his heart on his sleeve, a sunny nature.

Dr. H. H. Sanguinetti writes: With the sudden death of Howard Stratford there has passed from our midst a charming personality of the old school of doctors, not perhaps in high repute in these bustling days but standing for an essential something which we may be in danger of losing at the present time. Howard Stratford was a die-hard—not by any means necessarily a term of reproach, for it is the die-hards who will preserve for future generations many of our most precious traditions. What Stratford believed in he gave himself to whole-heartedly, and the Kensington Division was fortunate in securing his services as secretary in 1923. Working devotedly for it, he succeeded in revivifying it. Rather than relinquish his work for the division prematurely he suffered the writer to be elected chairman in 1927, but became chairman himself in 1929. His interest in the activities of the B.M.A. were shown further by his becoming secretary and in 1931 president of the Metropolitan Counties Branch, and his popularity with his fellow practitioners and with consultants was again demonstrated by his election to the presidency of the West London Medico-Chirurgical Society.

Stratford naturally joined up at once in 1914 and was with Allenbury in the march to Jerusalem. His war service permanently damaged his health, and probably this was partly responsible for his retirement from practice before the last war. But retirement did not mean idleness or even loss of interest in things medical; the war provided many opportunities for further work for which his previous experience had prepared him. I think he would have chosen a rapid ending to his life—restrictions would have been resented. He knew his life was precarious, but he was a gallant gentleman.

Dr. ARTHUR WINFIELD, who died on Jan. 26 at the early age of 60, was educated at Wigan Grammar School, Cambridge University, and the University of Liverpool. He obtained the Cambridge M.A. with honours in 1912, and qualified in 1917. He served abroad in the 1914–18 war as a surgical specialist with the acting rank of major. After the war he settled in practice in New Ferry, Cheshire, and continued there until his death. For many years he was honorary radiologist at the Birkenhead General Hospital. He was a member of the Liverpool Medical Institution and had been chairman of the Birkenhead and Wirral Division of the British Medical Association from 1941–3. He was also an active member of the St. John Ambulance Brigade and fulfilled the duties of police surgeon in his area. Marrying rather late in life, he lost his wife with tragic suddenness after only a few years. He will be remembered chiefly for his kindliness and for his readiness to help all in need. Quiet and reserved in manner, he was a staunch friend, a wise physician, and an outstanding obstetrician. He had few interests outside his work, but reading and music were his chief forms of relaxation, and he was a flautist of no mean ability. His death robs the profession of a man who, though not easily roused, fought tenaciously to maintain medicine not only as a science but as an art and an ideal.—G. S. S.

Dr. DAVID LAING died in Arbroath, Angus, on Feb. 27 at the age of 86. He was born in Kirkcaldy, and studied at Edinburgh University, graduating M.B., C.M. in 1884, and proceeding M.D. in 1887. He entered general practice in Arbroath just over sixty years ago, and was a member of the visiting medical staff of Arbroath Infirmary from that time until his retirement in 1946, when he became honorary consulting physician to the Infirmary. During his long years of service he played an important part in its development, and was himself mainly responsible for the introduction and working of the *x*-ray department, to which he gave so much of his time and enthusiasm. Throughout his life in Arbroath he was closely connected with the Ambulance Associations and the Boy Scout movement, of which for many years he was district commissioner. He was an old volunteer and an officer of the Territorial Army, and was the holder of the Territorial Decoration. He had been a member of the British Medical Association since 1894, and was chairman of the County of Angus Division from 1940–4. During his long life in Arbroath as a general practitioner his cheerfulness and buoyancy of spirit became bywords in the burgh, and left behind a pleasant memory of a fine old gentleman.—W. C. C.

Dr. CLAUDE LIONEL COODE died on March 23 at the age of 73, in Stroud, where he had been in practice for over forty years. Dr. Coode was a student at Oxford and at the London Hospital. He graduated B.M., B.Ch. in 1903 and settled in general practice in Gloucestershire after a period as surgical assistant at the out-patients' department of the London Hospital. He was later house-surgeon to Stroud General Hospital and subsequently, in 1907, honorary assistant surgeon and finally consulting surgeon there. Dr. Coode was largely responsible for starting the *x*-ray department and later the ear, nose, and throat department at the hospital. Apart from his professional activities Dr. Coode found recreation in sailing and in the study of natural history. He had been an active member of the British Medical Association for many years and was president of the Gloucestershire Branch in 1927–8.

Dr. WILLIAM HENRY JOHNSTON died on March 23 at his home in Tufnell Park, London, at the age of 62. A native of County Tyrone, Dr. Johnston was educated at the Royal School, Dungannon, and the Royal College of Surgeons in Ireland, qualifying in 1912. He worked for a time at the North-West Hospital, Hampstead, before serving in the 1914–18 war with the rank of captain, R.A.M.C. After the war he was in general practice at Fortress Road, N.W.5, and subsequently at Junction Road, N.19, where he remained until his death. At the outbreak of the recent war he was temporarily in charge of a civilian casualty evacuation train.

Dr. GEORGE ROBERT PHILIPSON, of Whitley Bay, Northumberland, died on March 26 at the age of 71 after a short illness. He graduated M.B., B.S. in 1906 from Durham University Medical College, and was a house-surgeon and house-physician at the Royal Victoria Infirmary, Newcastle-upon-Tyne. He was

in general practice for a number of years at Belford and Wallsend before coming, in 1924, to Whitley Bay, where he was in practice up to the time of his death. A native of Allendale, Northumberland, he had a life-long association with the Methodist Church, and was an active member and trustee of the Oxford Street Church at Whitley Bay. A man of quiet character, he was much loved by his patients. He leaves a widow, a son, and two daughters.

Dr. DONALD KERR MACDOUGALL, who died on April 4, was one of the most valued and trusted members of the profession in Southport. He graduated M.B., Ch.B. at Glasgow in 1915, and then served with the R.A.M.C. in Mesopotamia and in India during the first world war. Settling in practice in Southport in 1920, he developed ear, nose, and throat work as a specialty. For many years he was assistant surgeon to the ear, nose, and throat department of Southport Infirmary, and on retirement he was appointed consulting surgeon. The whole burden of work in this department was shouldered by him during the second world war, and he acted in a similar capacity at the Southport Emergency Service Hospital. Many other honorary and public appointments were held by him. He was chairman of the Southport Division of the British Medical Association in 1937–8, and a past president and secretary of the Southport Medical Society. He maintained a keen interest throughout the years he practised in Southport in the work of the Association and of the Society, and his sound and experienced advice was often sought in their management. A Gaelic scholar of note, he was possessed of a whimsical quality of mind which endeared him to his closest friends and lent him a charm appreciated by colleagues and patients alike. Conscious of the serious nature of his illness in the last few months of his life, he retained his whimsicality, and this and his courage made a visit to "Mac" the same delight in illness as it had been when he was in robust health. We mourn his loss and extend our deepest sympathy to his widow and three children.—P. Y. L.

Dr. ARTHUR WILLIAM LATHAM died at his home in Llanaber, North Wales, on April 4 after a long and painful illness borne with great fortitude. He was born at Haydock, near St. Helens, and was educated at Owens College, Manchester, where he had a distinguished career. He graduated M.B., Ch.B. in 1902, and proceeded M.D. two years later. He gained a fellowship in medicine in 1902–3, obtaining a gold medal. Dr. Latham had an extensive practice in St. Helens for over forty years, retiring only in 1946. He was an honorary surgeon at the St. Helens Hospital, medical officer to the Post Office, and a colliery doctor. In 1934 he was made a J.P. and sat on the St. Helens Bench. Dr. Latham took a great interest in sport, and was honorary surgeon to the St. Helens Rugby Football Club. He was an active member of the St. Helens Division of the B.M.A., and was chairman in 1927–8. Our sympathy goes out to his widow and his two daughters, both of whom are married.—A. A. W. M.

Medico-Legal

ALLEGED CONSPIRACY TO PROCURE MISCARRIAGES

At Marylebone police-court on April 7, before Mr. Rowland Thomas, K.C., two women doctors, Dr. Eleonore Bergmann, of Park Square, N.W., and Dr. Mary Bell Ferguson, of Devonshire Place, together with Mrs. Pauline Mary Evans, Dr. Bergmann's receptionist, were charged with conspiring together and with others unknown unlawfully to procure miscarriages. Mr. H. A. K. Morgan prosecuted; Mr. Gerald Howard defended Dr. Ferguson, and Mr. B. B. Gillis and Mr. A. J. Wrottesley defended Dr. Bergmann and Mrs. Evans. Dr. Bergmann was also charged with having attempted to commit suicide. Counsel for the defence said that at the right time defendants would make clear their answer to the charges.

Mr. Morgan referred at the outset to the statement of the law in such cases which was given by Mr. Justice Macnaghten in Rex *v.* Bourne at the Central Criminal Court in 1938.[1] The judge then said:

"If the Crown fail to satisfy the jury that it [the procuring of miscarriage] was not done for the purpose of preserving the life of the mother then my direction to you here is that your verdict should be a verdict of 'Not Guilty.' If, on the other hand, the Crown do satisfy you that they have discharged the burden placed upon them under the section [Infant Life Preservation Act, 1929, section 1] then your verdict should be 'Guilty.'" His lordship continued, "The law does not permit the termination of pregnancy except for the purpose of preserving the life of the mother. I think myself that those words ought to be construed in a reasonable sense; if the doctor is of opinion, on reasonable grounds, with adequate knowledge, that the probable consequence of the continuance of pregnancy would indeed make the woman a physical or mental wreck, then he operates in that belief for the purpose only of preserving the life of the mother."

The case for the Crown, Mr. Morgan went on, was that in none of the four instances brought forward did Dr. Bergmann operate, even in this wide sense, for the preservation of the life of the mother, and that in the two cases in which Dr. Ferguson gave a certificate it was not an honest expression of her belief that operation was necesssry to that end, but was given as a cloak to cover Dr. Bergmann's activities.

The first case—in which Dr. Ferguson was not concerned—was that of a married woman employed as a staff nurse at a hospital. Realizing she was pregnant, and that it would be practically impossible for her to get accommodation if she had a child, she went to Dr. Bergmann, who confirmed the pregnancy but at first refused to do anything to terminate it. Eventually, however, she yielded to the woman's pleadings. When seen by the police inspector at a later date Dr. Bergmann said, "Fancy Mrs. ——— doing this to me. I knew it was wrong. I first refused to help her. How on earth did you find out about it?" The inspector then mentioned other cases, and Dr. Bergmann made a statement about each. She had performed an operation under pentothal to terminate pregnancy. The first woman stated that she gave £10 to the receptionist, who herself received £5 in this and in each of the other cases. The receptionist had stated that Dr. Bergmann had told her that she never terminated a pregnancy unless she had a certificate from another doctor stating that this was necessary in the interests of the health of the mother.

The second case was that of a single woman, a student, who in November last suspected pregnancy, which was confirmed by her family doctor, who also said that she was quite healthy and perfectly capable of bearing a child. The woman made an appointment to see Dr. Bergmann, and broke down and cried, pointing out her unmarried condition and family difficulties. Dr. Bergmann suggested that she should see Dr. Ferguson, who was a specialist in psychoneurotic cases. Dr. Ferguson examined her and ultimately gave her a letter for Dr. Bergmann stating that she was of a neurotic type, that her reaction to children was pathological, that she was unbalanced in her attitude to life, and mortally afraid of her father. The fee paid to Dr. Ferguson was three guineas. Dr. Bergmann gave her a pentothal injection and carried out the operation. The fee paid was £75. Dr. Ferguson, questioned by the inspector concerning this case, was alleged to have stated that she had no doubt that the girl would have had a nervous breakdown had the pregnancy continued.

In the third case the woman was again recommended by Dr. Bergmann to see Dr. Ferguson, who at first advised her to have the child and get it adopted, but the girl said that this was out of the question, and ultimately Dr. Ferguson wrote a letter stating that the girl was in an anxiety state, that in fact there was a vicious circle—she was exhausted, was anxious, did not sleep, and so became more exhausted—and that it would be better for her health, bodily and mental, if the pregnancy were terminated. She also stated that the girl had had a very bad attack of jaundice a few months previously. In this case also £75 was paid to Dr. Bergmann.

The fourth case was that of a woman who had had a baby in June of last year, and at Christmas found herself again pregnant. She was married but had kept her marriage secret. In this case a fee of £50 was paid.

The four women concerned, whose names were not divulged, gave evidence to the above effect. In the two cases in which Dr. Ferguson's name was mentioned Mr. Gerald Howard asked the witnesses whether it would not be fair to say that Dr. Ferguson elicited a complete picture of their history and their physical and mental condition, and they agreed that that was so. One of them added that Dr. Ferguson talked to her

[1] *British Medical Journal*, 1938, **2**, 199.

for a long time, examined her lungs, took her blood pressure, and asked about her family. She was with her for about three-quarters of an hour.

Dr. Alexander D. Petro, of Wilton Place, testified with regard to the third woman that she came to see him and at her request he tested her for pregnancy and also examined her gynaecologically. He told her that he saw no reason why she should not have a baby. Similar evidence was given with regard to another of the women by her family practitioner.

The hearing was resumed on April 13, when all three defendants were sent for trial.

Medical Notes in Parliament

NATIONAL HEALTH SERVICE

MR. BEVAN'S STATEMENT

The Minister of Health made the following statement in the House of Commons on Wednesday, April 7:

I think that the time has come for me to make a statement to the House about the medical profession and the National Health Service. Needless to say, I make this statement on behalf both of the Secretary of State for Scotland and myself, and of the Government as a whole.

I have been receiving representations from many quarters, and I have studied the resolutions which both the Royal College of Physicians and the British Medical Association have sent on to me—and which have since been published and are familiar to the House. Meanwhile I have been trying, so far as I am able, also to determine for myself what it is that is really and sincerely worrying the doctor.

No doubt, as we gain experience, we shall find many modifications which would improve the scheme. That is always true of major legislation of this kind. But it seems to me that it is somewhere beyond all this that the key to the doctors' unease and restlessness lies, and that it consists of some instinctive fear—shared by many most well-meaning men and women—that, although the Act does not propose it and although the Government have themselves denied it, the real objective is a full-time, salaried State medical service. It is this fundamental point which I want now to tackle once and for all. As long ago as 1946, in this House, I said:

"Some doctors have expressed the fear that this is merely the beginning of a full-time salaried service. I cannot read into the mind of any future Minister or prophesy what may be done by future Governments, but that is not our intention." (*Hansard*, Nov. 4, 1946; vol. 428, c. 1125.)

But it seems clear that something more than my spoken assurance is needed, and I am certainly quite willing to do anything to banish this apprehension for good. The Royal College of Physicians has made the useful suggestion, with which the other Royal Colleges associate themselves, that I should now make it statutorily clear that a whole-time service will not be brought in by regulation, but would require further legislation to make it possible. My colleagues and I accept that most cordially. In short, we propose that it should be clearly impossible to institute a full-time salaried service by regulation alone. It would then need express legislation if it were ever proposed.

As the House knows, I am about to set up an expert legal committee to advise me on the disputed effect of the Act on partnership agreements. I hope to announce details of this Committee at Question Time to-morrow. It seems likely that a short clarifying Bill may be needed as a result of its inquiries. If so, I shall take the opportunity—and, if not, I shall invoke an opportunity specially—to ask Parliament also to clarify our intentions about any full-time salaried service in the way suggested above.

There is one further way, I think, in which we can eliminate these apparently widespread fears of a full-time salaried service. By many doctors the proposed fixed element of £300 in remuneration seems itself to be a menacing thing to freedom. I for my part have always conceived it rather as an assurance for the young beginner and for the older practitioner wishing to ease up in old age, and as a peg on which to hang additional assured payments for doubtful areas or other risks—and these are all worthy objects. However, if doctors are afraid of sinister intentions in this, I think these worthy objects can be achieved in another way, and no amendment of the Act is needed for this. Let all new entrants to practice have the advantage of this assured element of £300 for a period of, say, three years. Then let each decide for himself whether he will forgo it and pass to a system of plain capitation fees, or stay as he is with his fixed £300 plus a lower proportionate rate of capitation. He will be able to do this at any time. Similarly, let any doctor in established practice be able to elect for himself at any time to go on to the system of £300 fixed payment, plus the lower capitation rate, if and when he wants to—for example, in old age—instead of the higher rate with no fixed payment at all.

So now it can rest with the individual doctor himself to decide the extent to which he prefers the combined system of £300 plus lower capitation, or all capitation—with the exception that beginners will start with three years on the former system.

One other point. I have already given assurances in this House that I do not for one moment intend to interfere with the ordinary rights of doctors to express themselves in speech or in writing with absolute freedom. Similarly I have already given assurances to the profession that the Chairman of the Tribunal under the Act will be a lawyer of high professional standing appointed by the Lord Chancellor. I need scarcely repeat such assurances now, but—for the removal of any vestige of doubt—I do so.

I trust that what I have said will finally free doctors from any fears that they are to be turned in some way into "salaried civil servants." I look forward now to a future of active and friendly co-operation with the profession in putting into operation next July a great social measure which can be made a turning point in the social history of this country and an example to the world.

Mr. OLIVER STANLEY: All of us in this House hope that when this National Health Service scheme comes into force it shall come in a form which will command the whole-hearted co-operation of the doctors. It always has been, and it still is, for them to decide, and I shall make no comment on the proposals which the right hon. Gentleman has made; but I am sure that speaking for everyone on this side of the House we welcome anything which tends to break the deadlock which has occurred, and above all we welcome the tone in which the right hon. Gentleman has spoken to-day.

Mr. CLEMENT DAVIES: May I, on behalf of my colleagues and, I am sure, on behalf of everyone in this House, congratulate the right hon. Gentleman upon the action which he has taken and the statement he has made. I am quite sure it is the desire of every one of us that the National Health Service should work smoothly and harmoniously. I should like to ask him whether he is prepared—as I am sure he is—to meet the Negotiating Committee at once if they desire to see him.

Mr. BEVAN: As I have said on many previous occasions, and as my right hon. Friend the Prime Minister declared quite recently, I am always prepared to meet the Negotiating Committee when they desire to see me.

Dr. HADEN GUEST: May I also congratulate the Minister on this decision very largely on the ground that it will secure that the Service will begin with the good feeling of the doctors and the good feeling of the whole country in this matter—a most important aspect of this new service?

Mr. WILSON HARRIS: Will the right hon. Gentleman clarify his very encouraging statement in two respects? First, will he give an assurance that no influence will be brought to bear on the doctors in the matter of issuing sickness certificates? Secondly, with regard to the basic salary, the formal suggestion of the Royal College of Physicians seems to leave it open—I am sure it is not the right hon. Gentleman's desire—to any Minister to raise the £300 by regulation to £600, £900, or any figure so long as it does not constitute a whole-time salaried medical service? Would the right hon. Gentleman be willing to go as far as to put into the amending Bill a provision that the orginal sum of £300 should not be increased except by a new Act of Parliament?

Mr. BEVAN: That is a point of refinement which can be looked into later on. I am perfectly prepared to discuss the terms of the amendment with the representatives of the medical profession. I should like to take this opportunity of pointing out that there is very considerable misapprehension on this matter. People appear to think that the power to make terms and conditions of employment by regulation is something the Minister himself wants. The fact is that it is usually what the professions themselves desire, because it makes the whole system much more flexible. If we had to have an amending Act every time we altered the terms and conditions of remuneration, very often they would not be altered. The recent increase in capitation would not have been possible except by regulation.

Sir ERNEST GRAHAM-LITTLE: The right hon. Gentleman has asked what the doctors and the profession want. He has only mentioned one very important objection, and that is the fear of a full-time salaried service. I was present at the meeting of the Royal College of Physicians at which this resolution

was passed, and I should like to ask this question—will the Minister take into consideration the second motion which has been published in the Press, and which was moved at the meeting of the Royal College of Physicians, and accepted by them?

Mr. BEVAN: I am always prepared to receive any representations made to me either by the Negotiating Committee or by the Royal Colleges.

Mr. BAIRD: As the Minister to-day has been very generous to the British Medical Association, will he take into consideration the disquiet felt by Members on this side of the House about the delay in setting up health centres, and will he also consider making a gesture to this side of the House by speeding up the building of health centres?

Mr. BEVAN: That lies rather outside the scope of the statement I have made, which is concerned with the terms and conditions of remuneration of the general practitioners. I hope, however, that the statement I have made will elicit from the representatives of the doctors the same spirit of cordial co-operation.

MISS BACON: Arising out of the last statement made by the Member for London University (Sir E. Graham-Little), is my right hon. Friend aware that any further concessions made by him will not be welcomed by many of us on this side of the House?

Mr. BEVAN: It will be the opinion of hon. Members in all parts of the House and of the general public that the Government have gone a very considerable way to meet the profession, and it now lies with the profession to show an equal desire to make the National Health Service a success.

Mr. RANKIN: Will my right hon. Friend clear up one point? If at the end of three years a doctor decides to continue receiving the £300 basic salary will he have to accept the lower capitation fee?

Mr. BEVAN: Most certainly. He cannot have the £300 basic salary plus the higher capitation rate. He must take one or the other. The advantage of the proposal that I made is that the extent to which a fixed element is in existence will depend upon the initiative of the doctors themselves, and upon no one else.

Dr. SEGAL: In view of the cordial reception given from all parts of the House to the Minister's statement, will he now himself take the initiative in inviting the Negotiating Committee to meet with him to discuss their remaining fears about the National Health Service?

HON. MEMBERS: No.

Mr. BEVAN: Right hon. and hon. Members in all parts of the House will realize that the prestige of Parliament must be sustained. I am always ready to meet representatives of the medical profession. I should like to point out that we have sent to them in the course of the last few months a considerable number of letters asking for their co-operation on technical matters, and we have not received that co-operation.

Mr. GALLACHER: While agreeing that it is very desirable that the National Health Service should start off in a healthy manner, would it be permissible for the Government or the Minister to advise the workers to show the same solidarity and tenacity as the doctors?

House of Lords

A similar statement was made in the House of Lords on the same day by Lord ADDISON. Commenting on it, Lord SALISBURY said it deserved and needed a good deal more consideration. In addition the House of Lords would wish to scrutinize the legislation which he understood to be envisaged. It was evident that the Government were making efforts to break the deadlock between them and the medical profession. Everyone hoped that the proposal now put forward would result in an agreement satisfactory not only to the Government but to the medical profession, to whom all owed so great a debt for their selfless endeavours.

Lord SAMUEL said the statement made by Lord Addison could be taken to indicate the probability of a settlement between the two contending parties. As such it would be welcomed with great pleasure in all quarters. It must be a special satisfaction to Lord Addison to announce a measure of reassurance to the profession of which he had been so distinguished a member. The House would also wish to congratulate Lord Moran who, as President of the Royal College of Physicians, had done much to promote a settlement of the controversy.

Lord MORAN thanked Lord Addison and congratulated Mr. Bevan on what he had said in another place. Lord Moran whole-heartedly welcomed the statement. The Health Act had been feared for what it might become. Doctors had dreaded that it might be the prelude to a whole-time medical service. By promising an amendment of the Act Mr. Bevan had done all that was possible to remove that dread. He had fully met the representations which some had made to him by making the basic salary optional after three years in practice. The Minister had boldly met the main fears of the doctors and Lord Moran hoped he would be rewarded by the loyal support of all reasonable members of the profession. He hoped the doctors would now set their minds to the task of making this service under very difficult circumstances a turning point, as Mr. Bevan had said, in the social history of the country.

Legal Committee Appointed

On April 8 Mr. MONSLOW asked the Minister of Health whether he had any statement to make with regard to the legal committee which he proposed to appoint to advise him whether the National Health Service Act ought to be amended to secure an equitable result between partners in medical practice.

Mr. BEVAN replied that he was glad to say he had been fortunate enough to enlist the services of the following gentlemen: Mr. G. O. Slade, K.C. (Chairman), Mr. Colin Pearson, C.B.E., Sir Cyril Radcliffe, K.C., Mr. J. H. Stamp, and, from the Scottish Bar, Mr. J. R. Philip, K.C. The terms of reference were as follows:

To consider whether, in the application of the principles set out below to partnerships existing at the appointed day, it is desirable, in order to secure an equitable result as between partners, to amend Sections 35 and 36 of the National Health Service Act, 1946, either by clarification of the provisions thereof or by the extension of the powers thereby conferred or in some other way, and to make recommendations accordingly.

The principles above referred to are:

(1) The general prohibition of the sale or purchase of the goodwill or any part of the goodwill of the medical practice of a medical practitioner whose name is on the appointed day or at any time thereafter entered on a list prepared under Section 33 (2) of the Act is to be maintained.

(2) Compensation is to be paid on the lines set out in Section 36 to practitioners whose names are on the appointed day entered on any such list, and subject to the provisions of Section 37, to such practitioners only.

(3) Practice in partnership is to be encouraged, and, except for the purpose of securing an equitable result, there should be as little interference as possible with the continued operation of existing partnerships.

(4) Within the general principle of the prohibition of sale and purchase of goodwill, exceptions in relation to sales or purchase in pursuance of a partnership agreement existing at the appointed day are permissible, if they appear necessary to secure the equitable working of these principles in relation to doctors practising in partnership.

(5) The possibility of legislation to make some addition to the sum of £66 millions, for which provision is made in Section 36, in order to meet cases which might arise if doctors whose names were entered on a list at the appointed day were required, in pursuance of a partnership agreement existing at that date, to buy the goodwill of doctors whose names were not so entered, is not excluded if such an addition appears to be necessary in order to secure an equitable distribution of the £66 millions between doctors whose names are entered on a list at the appointed day.

Purchase Tax on Drugs

During his Budget speech on April 6 Sir STAFFORD CRIPPS said he was working out, with Mr. Aneurin Bevan, proposals for widening the scope of the present exemption for essential medicines. Hitherto the exemption list had been restricted to certain more costly preparations, but he and Mr. Bevan proposed to extend it to include a much wider range of non-proprietary medicines. A provision with this object would be included in the Finance Bill.

Diabetics Denied Pensions

Mr. GRANVILLE SHARP raised, on April 7, the claim to disability pensions of men who, after serving in the Forces during the last war, had been discharged on medical grounds with diabetes mellitus. The Minister of Pensions had stated on March 6 that whereas 3,600 men were discharged from the Forces suffering from this disease, only 600 of the number who applied for a pension had succeeded in their claim.

Dr. H. B. MORGAN said the Minister was in a difficulty as he had to take the advice of his experts. The bulk of medical men who got into Government Departments seemed to lose a great deal of that human feeling which they should have toward applicants.

Mr. THORNTON-KEMSLEY: "That is why doctors do not wish to be State servants."

Dr. MORGAN said that when a man got into the Ministry of Pensions he knew very little of what he was talking about.

Mr. BUCHANAN, in reply, welcomed the debate. On the question raised he was not a decider. Cancer cases were even more tragic. Under the Royal Warrant he must, for every person who was to receive a pension, whether for this disease or another, secure a medical certificate. If there was a doubt the doctors must give it to the applicant. In these cases the Ministry's medical opinion said there was no reasonable doubt that this disease did not arise out of war service. If Mr. Sharp could bring a responsible medical opinion to say that the Ministry was wrong, Mr. Buchanan would have the whole thing once again gone into thoroughly. In this war the Ministry had allowed 600 claims for diabetes, but in 3,000 cases its medical advisers had said there was no doubt that the claim was inadmissible. In other diseases such as cancer and leukaemia medical opinion was also behind him in the steps he had taken. Mr. Justice Denning, in every case which had come before him, had decided that the doctors of the Ministry were right. In Scotland only one case had gone against the Ministry. In Northern Ireland, where one case had been heard, the Court had agreed with Mr. Justice Denning. He asked Dr. Morgan to apply his mind to helping the Ministry rather than to abuse it. If he could bring medical evidence to show diabetes could be caused by war, Mr. Buchanan would promise generous treatment.

Ministry of Pensions Hospitals.—As Ministry of Pensions Hospitals are not transferable under Section 6 of the National Health Service Act, no change in administration is contemplated.

N.H.S. Costs.—Answering Sir ERNEST GRAHAM-LITTLE on April 8, Mr. BEVAN said that on the basis of current costs, etc., a full year's working of the National Health Service would involve an expenditure of about £230,000,000 gross. The Parliamentary estimate for the Service was based on the current levels of wages and prices, which had substantially increased since 1943.

The Services

Colonel Ian Fraser, D.S.O., O.B.E., R.A.M.C., T.A., has been appointed Honorary Colonel of the 107 (Ulster) Field Ambulance.

DEATHS IN THE SERVICES

Lieut.-Col. HENRY SMITH, C.I.E., died at his home in Clogher, Co. Tyrone, on Feb. 28, at the age of 88. He entered the Indian Medical Service in 1890 and retired in 1921. He was Civil Surgeon of Jullundur from 1896 to 1909, and was afterwards in Amritsar until his retirement. He was Honorary Surgeon to the Viceroy and became a Companion of the Indian Empire in 1918. During the first world war he was consultant in ophthalmology to the Army in Mesopotamia. He was probably best known for his technique in intracapsular extraction of cataract, now known as Smith's operation. He was believed to have performed in the region of 50,000 extractions at the time of his retirement. He visited America in 1921 on the invitation of the Ophthalmic Society of America and gave demonstrations of his cataract operation at many clinics. His reputation for genito-urinary surgery was also well known all over India. There have been many great characters and personalities in the Indian Medical Service, but few of them reached the high standard of "Jullundur" Smith. He lived to see the end of the service in which he spent thirty-one years of his life.

Lieut.-General Sir J. B. Hance, K.C.I.E., medical adviser to the Secretary of State for Commonwealth Relations, writes: I am very sorry to hear of his passing. He was one of the famous I.M.S. characters—a type which is rapidly becoming extinct—and his name is and remains a household word in the Punjab. A great character and a great thinker has passed on, but his memory will remain green with the members of the service and in its records. He had a good innings and a wonderful life."

The Minister of Health has approved the new rules made by the General Nursing Council by which nurses holding the certificate of the Royal Medico-Psychological Association may now apply for admission to the Part of the Register for Mental Nurses and/or for Nurses for Mental Defectives. Requests for an application form or for further information should be addressed to the Registrar, General Nursing Council for England and Wales, 23, Portland Place, London, W.1, in an envelope marked R.M.P.A., and should be accompanied by a stamped addressed envelope. Applications should be sent in as soon as possible.

Universities and Colleges

UNIVERSITY OF ABERDEEN

The following candidates have been approved at the examinations indicated:

M.D.—E. D. Mackworth (with commendation), W. D. Wilson.
M.B., CH.B.—Leslie M. V. Aitken, Doris I. Bisset, N. MacG. D. Blyth, A. G. Davidson, Elma R. Davidson, J. M. Ferries, Margaret Humble, W. B. Kennedy, K. S. H. Macgregor, A. G. Milne, Lorna Wheelan, Jeannie S. Wood.

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN MEDICAL RADIOLOGY.—*Part I:* V. H Bolton, P. L. Brangwin, J. H. Ll. Conway-Hughes, A. L. Frazer, Esmé H. M. Gillieson, A. Giordani, T. Griffiths, P. K. Haldar, S. J. Hinds, B. M. Jacobson, H. F. March, S. J. Meyersohn, T. L. C. Pratt, T. M. Prossor, F. G. M. Ross, G. M. Sinclair, D. Singh, R. Singh, S. M. Smith, W. Smith, Z. L. Szur, Tha Din, R. J. Walton.

UNIVERSITY OF BRISTOL

The following candidates have been approved at the examination indicated:

DIPLOMA IN RADIODIAGNOSIS.—*Part II:* G. R. Airth, D. Livshin, E. G. Redman N. F. Walsh.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

The Croonian Lectures to be given by Dr. Desmond Curran, which were arranged for May 4 and 6, have been postponed until Oct. 12 and 14.

The next College dinner will be held on the evening of the Comitia in May, i.e., on May 13. The price of the dinner will include wines and tips, and lounge suits should be worn. Fellows who wish to attend the dinner should send their names and cheques for £1 7s. to the College by May 7.

The President and Fellows of the College, at the invitation of the chairman and members of the committee of management of the Chelsea Physic Garden, through the kindness of Dr. W. S. C. Copeman, will view the Physic Garden at Swan Walk, Chelsea, on Thursday, June 3, at 3 p.m., when Dr. Copeman will give a short talk on its history. Those who wish to attend are asked to inform the Registrar of the College by May 10.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of Fellows will be held at the College (Lincoln's Inn Fields, London, W.C.) on Wednesday, April 28, at 4.30 p.m., to discuss the National Health Service Act in relation to the plebiscite recently taken by the British Medical Association.

A series of lectures in the surgery of childhood, arranged by the Royal College of Surgeons of England and the Institute of Child Health of the University of London, will be delivered at the College (Lincoln's Inn Fields, London, W.C.) daily (Saturdays and Sundays excepted) from June 7 to 22. The fee for the whole course is £5 5s., or 10s. for one lecture. Fellows and Members, and Fellows and Licentiates in Dental Surgery of the college, holders of the D.C.H., and students of the institute will be admitted to the whole course for £3 3s. (one lecture, 7s. 6d.). Tickets are obtainable from the secretary, Postgraduate Education Committee, Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2, and from the secretary, Institute of Child Health, Hospital for Sick Children, Great Ormond Street, London, W.C.1. During the period of the course there will be a standing pathological exhibition in the museum of the Hospital arranged by Dr. M. Bodian.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At an extraordinary meeting of the College held on March 24 the laws relating to the Fellowship by examination were amended as follows: *Part I*, a written paper and an oral examination in anatomy and physiology; a written paper and an oral examination in pathology and bacteriology. *Part II*, on the principles and practice of surgery and on an optional subject to be chosen by the candidate from among (1) surgical pathology and operative surgery, (2) laryngology, otology, and rhinology, (3) obstetrics and gynaecology, and (4) ophthalmology.

The new laws come into operation on Jan. 1, 1949. Candidates who have appeared for the Fellowship examination on or before March 15, 1948, will be allowed to reappear for the examination at any time under the conditions set forth in the laws at present in operation. Candidates who appear for the examination for the first time on June 28, 1948, and are unsuccessful will have an opportunity of reappearing for the examination on Oct. 1, 1948, under the existing laws, but thereafter, if necessary, they must reappear under the new laws. Candidates who appear for the examination for the first time on Oct. 1, 1948, and are unsuccessful must thereafter appear under the new laws.

EPIDEMIOLOGICAL NOTES

Measles

The rise in notifications in recent weeks has been disproportionate and somewhat out of rhythm. Although no explanation of this trend can be offered, consideration of the pattern of notifications in the country makes the rise more easily understood.

Since general notification began in 1940 there have been four biennial periods in each of which the main epidemic peak came in the early months of the second year, following a gradual rise during the whole of the first year. During each of the first three two-year periods the last three months of the second year were periods of sub-epidemic level. At present (the early part of the first year of the fifth biennial period) notifications are at an exceptionally high level, and the rate of increase is more rapid than at the corresponding period in previous "even" years.

The main difference from previous periods seems to be the absence of the expected quiescent period in the last months of 1947. A rise in incidence followed immediately upon the subsidence of the main 1947 epidemic, and a comparatively high level had already been attained by the beginning of 1948. Present levels of incidence are greatly in excess of those at the corresponding time in 1946 in all parts of the country, the proportionate increase being greater in some districts than in others.

In the following counties the figures have already exceeded the maximum weekly figure during 1946–7, and are still rising: Herts, London, Norfolk, Peterborough.

In Middlesex and Surrey the notifications, having reached weekly figures nearly as large as the 1946–7 maximum, are still rising.

The following, having reached figures in excess of the maximum weekly figures in 1946–7, seem to have passed their peak and the figures are now declining: Cornwall, Northants, and the Holland, Kesteven, and Lindsey divisions of Lincolnshire.

It is noteworthy that London and Norfolk are both among the above-mentioned counties. In the previous biennial period these two counties, with East Suffolk, formed a small group which differed from the rest of the country in having the maximum incidence in the first, instead of the second, year. Two possibilities present themselves:

1. That the present incidence is the beginning of a two-year cycle similar to the previous four and leading to an unprecedented maximum at the beginning of 1949. Against this are the facts that (*a*) the rate of increase is more rapid than at the same stage in previous epidemics; (*b*) the rise began well before the beginning of the year; and (*c*) as mentioned above, some counties have already passed their peak and begun to decline.

2. That the present trend is unique in experience since notification began, and that we are now approaching a maximum for the whole country in the "even" year.

Forecasting what may now happen is largely guesswork. In 1946–7 certain towns (e.g., London, Sunderland, and Liverpool) began to show an increasing incidence early in 1946 and came to a maximum in the summer of that year, each having a further epidemic in the summer of 1947. England and Wales may possibly follow the lead of these towns, in which case we can expect two maxima in 1948–9, one in the summer of each year. On the other hand, if a sufficiently large part of the country remains on the rhythm of the winter–spring epidemic we may expect the figures for the whole country to show two peaks, one in the summer of 1948 and the other early in 1949. It seems inevitable that there will be a high incidence this summer, and this may be welcomed as being likely to reduce the case fatality even further.

Poliomyelitis

The number of notifications (uncorrected) in England and Wales in the week ended March 27 was: poliomyelitis 17 (20); polio-encephalitis 1 (2). Figures for the previous week are given in parentheses.

It is of some interest to compare the experience of the beginning of this year with that of the beginning of 1939. The year 1938 was the year of highest incidence before 1947. The total number of notifications in the thirteen weeks ended April 1, 1939, was: poliomyelitis 116, polio-encephalitis 21. The total number in the thirteen weeks ended March 27, 1948, was poliomyelitis 425, polio-encephalitis 21. The figures for 1939 were higher than is usual in the first quarter, and the Chief Medical Officer of the Ministry of Health pointed out (*Annual Report for 1938*, p. 32) that a similar phenomenon had been observed in 1927 following the high prevalence of 1926. In 1926–7 it was ascribed to the abnormally mild weather that characterized the last two months of 1926, but in the winter of 1938–9 there was a very cold spell about Christmas followed by a very wet and cold January.

The incidence of poliomyelitis in the early part of a year seems to be an inconsistent guide to the probable incidence during the year. The following are some examples:

Notifications (Poliomyelitis only)

Year	First quarter	Whole year
1925	72	371
1926	55	1,159
1938	71	1,489
1939	116	744
1944*	58	464
1945	52	784
1946	83	606
1947	102	7,350†

* Figures for 1944 and after are "corrected."
† Estimated "corrected" figure.

Discussion of Table

In *England and Wales* infectious diseases were less prevalent during the week. There were decreases in the incidence of measles 726, whooping-cough 701, scarlet fever 321, acute pneumonia 243, dysentery 34, and diphtheria 19.

The largest decreases in the incidence of measles were reported from London 291, Middlesex 202, Norfolk 141, and Cheshire 115; the largest increases were Lancashire 131, Derbyshire 95, and Surrey 84. The notifications of whooping-cough fell in all areas except in Wales, where a small rise of 27 was recorded; the largest declines were Middlesex 106, Lancashire 78, Essex 73, Yorkshire West Riding 66, London 54, and Kent 52. The incidence of scarlet fever fell throughout the country; the largest fall was 77 in Lancashire.

Diphtheria was at the lowest level for seven months, although no change of any size occurred in the local trends during the week. A decrease in the number of notifications of acute pneumonia was recorded in most areas; the largest decline was Lancashire 53.

A further 22 cases of dysentery were notified from the outbreak in Derbyshire, Shardlow R.D., where 9 cases were reported last week. The other important centres of dysentery were Lancashire 59 (Liverpool C.B. 17, Salford C.B. 13), Yorkshire West Riding 18 (Sheffield C.B. 13), London 10. The largest returns of acute poliomyelitis were: London 3, Wiltshire (Trowbridge U.D. 2), and Warwickshire (Birmingham C.B.) 2.

In *Scotland* a decreased incidence was recorded for measles 136, acute primary pneumonia 69, scarlet fever 41, and cerebrospinal fever 15. The only increase was in the incidence of dysentery 23. The chief centres of dysentery were the cities of Dundee 10, Edinburgh 16, Glasgow 9.

In *Eire* the only changes in the trends of infectious diseases were decreases in the notifications of measles, 13 and diphtheria 5, and an increase of 12 in the notifications of diarrhoea and enteritis.

In *Northern Ireland* the largest changes in trends were a decrease of 20 in the notifications of scarlet fever and an increase of 6 for cases of whooping-cough.

Quarterly Returns for Eire

The birth rate during the December quarter was 20.2 per 1,000, being 0.5 below the rate for the preceding fourth quarter. Infant mortality was 64 per 1,000 registered births and was 2 above the rate for the December quarter of 1946. The death rate was 11.7 per 1,000; this rate was 0.8 below the rate for the preceding fourth quarter, which was the lowest of recent December quarters. The death rate from respiratory tuberculosis was 8 per 10,000 and from other forms of tuberculosis 2 per 1,000; these rates were the same as for the preceding fourth quarter.

The provisional figures for the year show a birth rate of 23.1, the highest of recent years. The death rate was 14.9 and was 1.0 above the rate for the preceding year. Infant mortality was 67, being 4 above the rate for 1946. Deaths from epidemic diseases included 734 from diarrhoea and enteritis under the age of 2 years, 291 from whooping-cough, 106 from measles, 55 from diphtheria. There were 2,796 deaths attributed to pulmonary tuberculosis and 838 to other forms of tuberculosis —240 and 61 respectively more than in the preceding year.

Week Ending April 3

The notifications of infectious diseases in England and Wales during the week included: scarlet fever, 1,421, whooping-cough 2,639, diphtheria 161, measles 10,874, acute pneumonia 764, cerebrospinal fever 51, acute poliomyelitis 15, dysentery 188, paratyphoid 1, and typhoid 5.

No. 13

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 27.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each Infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1948					1947 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	53	5	8	1	3	115	9	37	3	—
Deaths		—	—				2	—		
Diphtheria	154	13	46	10	2	254	28	46	16	18
Deaths	3	—	1	—	—	3	1	1	—	—
Dysentery	136	10	53	1	1	85	6	13	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—	—	—	1	—	—	—	—
Deaths		—					1			
Erysipelas			40	5	3			41	6	7
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years	44	4	9	25 3	2	74	10	14	33 8	1
Deaths										
Measles*	9,308	1425	369	99	48	10,780	541	370	36	38
Deaths†			3	—	—	21	1	—	—	1
Ophthalmia neonatorum	38	4	8	—	—	83	3	16	—	—
Deaths										
Paratyphoid fever	1	—	1 (B)	—	—	3	—	—	—	—
Deaths	—	—	—	1	—	—	—	—	—	—
Pneumonia, influenzal	720	44	6	5	6	1,025	65	16	15	2
Deaths (from influenza)‡	14	—	3	—	3	38	3	5	6	2
Pneumonia, primary	242	44	226	29 12	9		68	73	33	16
Deaths										
Polio-encephalitis, acute	1	—				—	—			
Deaths							—			
Poliomyelitis, acute	17	3	1	—	—	7	1	2	1	1
Deaths§	2	—					—			
Puerperal fever		—	11		—		1	29		—
Deaths										
Puerperal pyrexia‖	103	12	14	1	—	141	12	16	—	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,526	97	261	36	39	1,317	96	220	26	57
Deaths†			—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	1	1	—	—	—
Deaths				—	—				—	—
Typhoid fever	4	—	1	7	—	5	1	—	14	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,603	192	50	45	16	2,263	267	358	94	29
Deaths	13	2	1	—	—	25	2	4	9	3
Deaths (0–1 year)	306	37	58	19	9	549	69	69	63	21
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,704	705	601	179	109	6,063	945	802		177
Annual death rate (per 1,000 persons living)			12·1	11·2				16·7	22·1	
Live births	7,663	1195	963	411	233	10,678	1634	1355		313
Annual rate per 1,000 persons living			19·4	25·7				27·3	24·5	
Stillbirths	194	26	32			286	38	43		
Rate per 1,000 total births (including stillborn)			32					31		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

Medical News

Mrs. Roosevelt at Netherne Hospital

On Friday, April 9, Mrs. Roosevelt visited Netherne Hospital, Coulsdon. She saw the chapel, nurses' training school, female occupational therapy department, the patients' canteen, the staff and patients' cafeterias, the insulin bay, operating theatre, art studio, three of the reception wards, library and reading room, hairdressing saloons, laboratories, a display of occupational therapy, and an exhibition of the patients' pictures. Mrs. Roosevelt was particularly interested in radiography taken during leucotomy operations with two leucotomes in position in the brain. The charts of cases she saw undergoing prolonged narcosis were inspected and she asked many questions about the nursing and feeding. The gallery of pictures which had been produced in psychotherapeutic sessions also attracted Mrs. Roosevelt's attention, particularly as she had some knowledge of the use of this work in the treatment of delinquent children. The various kitchen articles, toys, and library shelving made from salvage material were carefully examined as were some of the occupational products which are being sent to America through the Women's Voluntary Services. Mrs. Roosevelt asked about the social work of the hospital, the follow-up scheme, the patients' social clubs, the willingness of patients to return if they became unwell, the patients on ground and town parole, the admission rate, and the hospital population. A number of the Women's Voluntary Service workers who have given welcome assistance in the hospital for the past two years were introduced to Mrs. Roosevelt.

Research in Disseminated Sclerosis

A gift of money has enabled the Middlesex Hospital Medical School to endow a scholarship for research in organic nervous diseases. The work will be carried out under the direction of the physician in charge of the Department for Nervous Diseases. The subject chosen for research is disseminated sclerosis. Dr. N. D. Compston, M.R.C.P., has been appointed research scholar for 1948–9.

Health Education

The Central Council for Health Education is planning regional courses of lectures to be held throughout the country for professional workers nominated by local authorities. Attendance is free. It will also appoint an exhibitions officer to make material available free of charge for exhibition by local health authorities. In order to develop these services the Central Council has closed down its area offices except in Northern Ireland. Information may be obtained from the Central Council, at Tavistock House, Tavistock Square, London, W.C.1.

American Psychiatric Association

Dr. Daniel Blain, formerly chief of Neuropsychiatric Services for the Veterans Administration, has been appointed Medical Director of the American Psychiatric Association.

Chevalier of the Order of St. Charles

The decoration of Chevalier of the Order of St. Charles has been conferred upon Dr. Kenneth Edward Eckenstein by the Prince of Monaco, in recognition of valuable services rendered by him in the capacity of Vice-Consul at the Consulate-General of Monaco in London.

Wills

Lieut.-Gen. Sir Harold Ben Fawcus, K.C.B., C.M.G., D.S.O., formerly D.G.A.M.S., left £838. Dame Freda Clara Martyn, formerly Dr. Freda Kelly, widow of Sir Henry Martyn, K.C.V.O., left £2,533. Dr. John Edridge Healey, of Fulwood, Lancs, left £66,373. Surgeon Rear-Admiral Charles Marsh Beadnell, president of the Rationalist Press Association, left £7,733.

COMING EVENTS

Exhibition of German Publications

Lord Pakenham, Minister for Germany and Austria, will open the first post-war exhibition of German publications from the four zones of occupation at the Academy Hall, Oxford Street, London, W., on Monday, April 19, at 4 p.m. The exhibition will remain open for a week.

South-West Metropolitan Region Psychiatric Advisory Group

A general meeting of the psychiatrists in the South-West Metropolitan Region will be held at the County Hall, Kingston-upon Thames, on Wednesday, April 21, at 5 p.m. The chairman of the Regional Board, Mr. F. H. Elliott, D.L., J.P., has kindly invited all those attending to tea at 4.30 p.m. Those who intend to be present should notify the honorary secretary, Dr. T. P. Rees, Warlingham Park Hospital, Warlingham, Surrey.

Lebanon Hospital for Mental Diseases

The 48th annual meeting of the Lebanon Hospital for Mental Diseases will be held at the Cora Hotel, Upper Woburn Place, London, W.C., on Thursday, April 22, at 4.30 p.m., when the medical director, Dr. R. B. Robertson, will present his first annual report and personal accounts of the work of the hospital will be given by Mr. R. de C. Baldwin and Dr. W. M. Ford Robertson. There will be opportunity for questions and discussion and all interested are invited to attend the meeting.

Association of Surgeons of Great Britain and Ireland

The annual meeting of the Association of Surgeons of Great Britain and Ireland will be held at Edinburgh on Thursday, Friday, and Saturday, May 6, 7, and 8, instead of in July as previously planned. A full programme will be circulated in April, but the provisional arrangements are as follows: *May 6*, business meeting; discussion on "Maintenance of Metabolism by Parenteral Methods." *May 7*, discussion on "Diaphragmatic Hernia." *May 8*, discussions on "Hypertension" and "The Surgery of Pancreatic and Ampullary Neoplasms." Fellows or Associate Fellows requiring accommodation in Edinburgh should apply direct to Messrs. Thomas Cook and Son, Ltd., Princes Street, Edinburgh (Tel. Edinburgh 33794), as soon as possible. There will probably be a meeting of the International Surgical Society on May 6 at 5 p.m. Fuller details may be obtained from Mr. H. W. S. Wright, M.S., F.R.C.S., honorary secretary of the Association, at 45, Lincoln's Inn Fields, London, W.C.2.

N.A.P.T. Medico-Social Section

The Inaugural Meeting of the N.A.P.T. Medico-Social Section will be held on May 7 at 5 p.m. at B.M.A. House, Tavistock Square, London, W.C.1. Sir Robert Arthur Young will preside, and Mr. Anthony Greenwood, M.P., will address the meeting on "Social Aspects of Tuberculosis." All who are interested in social work for the tuberculous are invited.

Haematology

The International Society of Hematology will hold its biannual meeting at the Hotel Statler, Buffalo, New York, on Aug. 23–26. Those interested should communicate with Dr. Robert R. Race, Lister Institute, Chelsea Bridge Road, London, S.W.1.

Physical Education

The Friends of Physical Education will hold an International Congress at Venice on May 10–13. Further information may be obtained from Prof. Mario Gallo, Comitato Esecutivo di Feste Internazionali di Educazione Fisica e Sports, Venezia, Italy.

International Congress on Obstetrics and Gynaecology

The American Committee on Maternal Welfare has agreed to sponsor, in conjunction with the Fourth American Congress, a conference on obstetrics and gynaecology, which will be held at Hotel Pennsylvania, New York City, from May 14 to 19, 1950. All inquiries should be addressed to the general chairman of the congress, Dr. Fred L. Adair, 24, West Ohio Street, Chicago 10, Illinois, U.S.A.

Climatology

An International Congress of Climatology and Thalassology will be held at Riccione (Forlì), Italy, on June 12–13. Further information may be obtained from Prof. Tommaso Oliaro, Minerva Medica, Torino, Italy.

Airborne Medical Services

All ranks who served in the 1939–45 war who wish to attend a reunion of the Airborne Medical Services on or about Sept. 25 in or near London should communicate with Major A. D. Young, D.S.O., R.A.M.C., The Depot and T.E., R.A.M.C., Boyce Barracks, Crookham, Hants.

SOCIETIES AND LECTURES

Saturday

BRITISH ASSOCIATION OF ALLERGISTS.—April 17, 11.30 a.m., at Junior Common Room, Worcester College, Oxford, Business Meeting. 2.30 p.m., at Lecture Room, Nuffield Institute of Medical Research, 43, Woodstock Road, Oxford, Scientific Meeting and Discussion: *"Allergic Conditions of the Eye."* Opening speaker, Dr. Vera Walker.

MIDDLESEX COUNTY MEDICAL SOCIETY.—At Shenley Hospital, near St. Albans, Herts, April 17, 3 p.m., General Meeting. *Demonstration of Treatment with Electric Convulsion Therapy and Curare*, by Drs. P. D. W. Shepherd and D. T. Bardon followed by discussion. Clinical cases by Drs. R. Pratt and S. T. Hayward.

Monday

EDINBURGH UNIVERSITY: PHYSIOLOGY CLASSROOM.—April 19, 5 p.m. *"Medical Archaeology and Folklore,"* by Dr. Douglas Guthrie.

HUNTERIAN SOCIETY.—At Talbot Restaurant, London Wall, E.C., April 19, 7 for 7.30 p.m. Annual general (dinner) meeting. *"Laboratory Animals—Their Uses and Abuses."* Address by Mr. A. L. Bacharach.

ROYAL SOCIETY OF ARTS, John Adam Street, Adelphi, London, W.C.—April 19, 4.30 p.m. Second Cantor Lecture on Recent Advances in Anaesthesia: *"The Theory of Anaesthesia—Ether and Chloroform—Early Apparatus—Inhalation Anaesthetics—The Signs of Anaesthesia. The Anaesthetic Gases—Apparatus,"* by Dr. Frankis T. Evans.

Tuesday

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE.—At Edinburgh Royal Infirmary, April 20, 5 p.m. *"Medico-Sociological Aspects of Marriage,"* by Prof. F. A. E. Crew, F.R.S.

Wednesday

HARVEIAN SOCIETY OF LONDON.—At St. Mary's Hospital, Paddington, W., April 21, 4.15 p.m. Clinical Meeting: *"Penicillin Dosage,"* by Sir Alexander Fleming, F.R.S.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, London, W.—April 21, 3.30 p.m. *"The Influence of Heredity on Disease (Illustrated),"* by Prof. L. S. Penrose.

Thursday

EDINBURGH ROYAL INFIRMARY.—April 22, 4.30 p.m. Honyman Gillespie Lecture: *"Folic Acid—Indications and Contra-indications,"* by Prof. L. S. P. Davidson.

MEDICO-LEGAL SOCIETY.—At 26, Portland Place, London, W., April 22, 8.15 p.m. *"The Medico-Legal Problems of the Aged,"* by Sir Geoffrey King and Dr. J. H. Sheldon.

Saturday

KENT PAEDIATRIC SOCIETY.—At the Star Hotel, Maidstone, April 24, 2.30 p.m. Annual general meeting.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos Street, London, W.—April 24, 2.30 p.m. General meeting. *"The History of the Treatment of Venereal Disease,"* by Mr. Johnston Abraham.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Anderson.—On March 28, 1948, to Tessa, wife of Dr. A. L. S. Anderson, Seed Hill, Littleborough, Lancs, a son.

Brittain.—On April 1, 1948, at Harcourt Nursing Home, Dublin, to Ina, wife of Dr. George Brittain, a son.

Buxton.—On March 14, 1948, to Alyson, wife of Dr. Robert James Buxton, Galhampton Manor, Yeovil, Somerset, twins—son and daughter.

Cohen.—On April 4, 1948, at Westminster Hospital, to Joan (née Burke), wife of Dr. E. G. Cohen, a daughter—Diana Gillian.

Cooper.—On March 20, 1948, at Southmead Hospital, Bristol, to Flavia Cooper (née James), M.B., Ch.B., D.A., wife of Ashley Cooper, a daughter—Lorraine.

Fodden.—On April 5, 1948, at Park House, Waterloo, Liverpool, 22, to Jean, wife of Dr. J. H. Fodden, a daughter.

Grant.—On March 24, 1948, at Gwyn-mor Nursing Home, Cardiff, to Cara, wife of Hugo M. Grant, M.B., Ch.B., F.R.C.S.Ed., a son—Ian Nicholas.

Hendry.—On April 2, 1948, at Nuneaton General Hospital, to Dr. and Mrs. D. W. Hendry of Nuneaton, a son.—A brother for Billy and Joy.

Kershaw.—On March 25, 1948, at 51, Lillington Road, Leamington Spa, to Valerie (née Jackson), wife of Dr. G. R. Kershaw, a son.

McConnachie.—On April 2, 1948, to Dorothy I. McConnachie (née Mortimer), M.B., Ch.B., wife of James S. McConnachie, M.B., Ch.B., F.R.C.S., of 11, Burnside Gardens, Aberdeen, a son—Stewart.

McNally.—On March 28, 1948, at Dublin, Eire, to Betty (née Hayes), wife of P. A. McNally, M.D., F.R.C.P.I., a daughter.

Williams.—On March 25, 1948, at Firs Maternity Hospital, Nottingham, to Margaret Doreen (née Shaw), wife of Dr. T. Gwynne Williams, a daughter.

MARRIAGES

Stevenson—Ferguson Wood.—On Feb. 26, 1948, at Addlestone, Surrey, John Stevenson, M.R.C.S., to Marjorie Ferguson Wood, B.Sc., S.R.N.

Way—Cattermole.—On April 3, 1948, at Christ Church, Radlett, Stephen Philip Berkeley Way, M.B., B.S., (London), to Jean Cattermole, S.R.N.

DEATHS

Blair.—On April 1, 1948, at 16, Greyfriars Gardens, St. Andrews, Charles Edward Blair, M.D.Ed.

Brown.—On March 28, 1948, at Llangynhafal, Denbigh, N. Wales, Stanley Brown, M.B.E., M.B., Ch.B., aged 68.

Calthrop.—On April 7, 1948, Gordon Thomas Calthrop, M.D., D.M.R.E.

Deanesly.—On March 31, 1948, at Llanbedr, Merioneth, Edward Deanesly, M.D., F.R.C.S., aged 82.

Gandy.—On March 30, 1948, at Corners, Cerne Abbas, Dorset, Thomas Hall Gandy, M.B.

Harke.—On March 31, 1948, at St. Thomas's Hospital, London, S.E., Wilfred Vaughan Harke, M.R.C.S., L.R.C.P., D.P.M., aged 52.

Philipson.—On March 26, 1948, at "Seaward," The Links, Whitley Bay, Northumberland, George Robert Philipson, M.B., B.S., aged 71.

Pollock.—On March 29, 1948, Aileen Marion Seton Pollock, F.R.C.S.Ed., Principal, Women's Christian Medical College, Ludhiana, Punjab, N. India.

Rozario.—On March 20, 1948, at his home, 1, Mackie Avenue, Patcham, Brighton, Christopher Joseph Rozario, M.R.C.S., L.R.C.P.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Liquid Paraffin for Cooking

Q.—*The use of mineral oil for consumption and for cooking purposes seems to be increasing. Apart from the fact that the oil is wholly without food value, has it or has it not any deleterious effect upon the consumer? In the United States the opinion is held that the use of mineral oil in salad dressing is an adulteration under the Federal Food, Drugs, and Cosmetic Act, however it may be labelled. A recent decision in a North-west of England magistrate's court confirmed this opinion, and evidence was given that the continued use of hydrocarbon oil might lead to a "paraffin liver." Is there any evidence to support these opinions?*

A.—The laxative properties of mineral oil (liquid paraffin) depend upon the fact that it is almost completely unabsorbed. The possibility of its leading to "paraffin liver" seems hardly likely to arise when the cells of the intestinal lumen are exercising their normal physiological functions. These generally do not allow the passage of particulate fat unless the globules are below a certain critical diameter, depending upon a number of factors, including the chemical nature of the fat itself. If, however, circumstances favour the thorough dispersion of liquid paraffin in the upper part of the alimentary tract there may occur some degree of absorption, with subsequent storage either in the fat depots along with unsaponified fats via the lymphatics, or in the liver along with resaponified fatty acids via the portal vein. It is conceivable that continuous treatment with relatively high doses of paraffin might therefore ultimately lead to considerable deposition in the liver, though it is doubtful what pathological consequences, if any, would follow.

There is, however, one clear contraindication against the excessive oral use of mineral oils. At the present time a considerably higher proportion of our vitamin A requirements is being met by the conversion of vegetable carotenoids (particularly β-carotene) into vitamin A than by supplies of the preformed vitamin, restricted owing to the relative shortage of eggs, milk, cheese, and liver, which were the most abundant sources in pre-war diets. Carotene is a hydrocarbon, vitamin A is an alcohol, with the result that the former is the more lipophilic and the latter the more hydrophilic. Consequently, in an emulsion containing both carotene and vitamin A the carotene will tend to pass into the non-aqueous and the vitamin A into the aqueous phase. If the non-aqueous phase consists to a considerable extent of unabsorbable oil, such as liquid paraffin, it is clear that a corresponding proportion of the provitamin will be lost in the faeces with the oil. The greater the proportion of vitamin A derived from the provitamin in our diet the more likely is excessive paraffin medication to produce some degree of vitamin-A deficiency. This medicament should, in all instances, be taken in moderation; its use as a substitute for vegetable oils in salad creams and cooked products generally should be prohibited by law; and the rare cases requiring unusually large doses should be recommended to take between these doses some concentrated preparation of vitamin A, of which a number are available through ordinary channels.

Stability of Penicillin

Q.—*How long do the various preparations of penicillin retain their potency? Could an authoritative table be given for ordinary penicillin, crystalline, ointment, cream, lozenges, lamellae, solution in saline—both at ordinary room temperature and when stored in the usual household refrigerator?*

A.—The stability of penicillin depends on its degree of purity, concentration, and composition, and on the *p*H of the medium in which it is contained and temperature. Although there is much accurately determined and published information about the rate of deterioration of different preparations, so many variables are concerned that no hard-and-fast rules are possible. The powder itself is indefinitely stable if kept dry, but according to Brindle and Keefe (*Quart. J. Pharm.*, 1947, **20**, 177) the usual commercial type of container capped with rubber is not efficiently sealed against moisture; this can slowly enter and cause loss of potency. Other dry preparations, such as lamellae and lozenges, should keep for months if protected from the air. Properly made solutions deteriorate slowly in a refrigerator. A satisfactory rule would be to use them within one week. Ointments or creams, if the base is satisfactory, behave similarly. Since exact potency is less important, they might well be kept for longer periods in the cold. At room temperature deterioration is more rapid. Solutions and creams should be refrigerated unless they are to be used up within two days.

Immunity to Cancer

Q.—(*a*) *Is there such a thing as natural immunity to cancer in human beings?* (*b*) *Has any lysis or agglutination been observed when the serum of a healthy person whose family is known to be free from cancer is brought into contact with living human cancer cells?* (*c*) *Have blood or plasma transfusions from healthy persons of non-cancer families been tried in the treatment of human cancer?*

A.—(*a*) So far as is known, no condition of natural immunity to cancer is found in man. Since it might be difficult to demonstrate, this is not to say it does not exist, and remarkably high degrees of insusceptibility, either to particular classes of tumour or to spontaneous cancer as a whole, can be attained by selective inbreeding in mice. Even so, such animals may be susceptible to the induction of cancer by a carcinogenic agent applied externally. Apart from natural immunity, organ immunity may be conferred in special cases by intervention, notably in cancer of the penis, which does not occur after circumcision on the eighth day according to the Jewish practice. It should be noted that the protection given by the Jewish operation is not due to removal of the cancer-bearing area (see Kennaway, *Brit. J. Cancer*, 1947, **1**, 335).

(*b*) Lysis of live cancer cells by normal serum was described by Freund and Kaminer, and was made the basis of the so-called Freund-Kaminer diagnostic reaction, which, however, has not been generally confirmed.

(*c*) The writer is not aware of any such attempts except those undertaken from time to time in leukaemia, and most recently by P. Croizat and L. Revol ("Traitement des leucémies aiguës par les perfusions sanguines répétées," *Lyon méd.*, 1947, **177**, 553–60). In such cases transfusion is of course carried out using blood from healthy persons, not necessarily "of non-cancer families."

Massage in Spastic Paralysis

Q.—*Does massage influence muscle tone? What is the value of massage in the affected limbs in: (a) spastic paraplegia of cerebral origin; (b) spasticity of striatal disease; and (c) compression paraplegia of traumatic origin?*

A.—Massage does not influence muscle tone. The three types of spastic paralysis mentioned respond similarly to massage and need not be considered separately. While physiotherapeutic techniques such as muscular relaxation and re-education can be most helpful, massage alone is not likely to be of value in these conditions. Superficial effleurage expertly administered may assist in obtaining relaxation prior to re-educative exercises, but massage wrongly applied may act as a stimulus to further muscle contraction.

Diet after Total Gastrectomy

Q.—*Can you advise a suitable diet for a man who has had a total gastrectomy?*

A.—Most patients who have undergone total gastrectomy can take a diet of the post-Lenhartz type. In the early stages multiple small meals at regular intervals are desirable; these may include pounded fish, minced meat, and purées of vegetables as well as the other dishes which are common to all diets for convalescence from peptic ulceration. The proximal loop of jejunum rapidly becomes dilated and able to accommodate a meal of reasonable size without discomfort to the

patient. Nevertheless it is advisable to avoid bulky foods, and the calorie value of the diet must be maintained with milk drinks. There is need for additional vitamins, and this is best met by giving a concentrate. Such patients also have particular difficulty in absorbing iron.

Early Signs of Rheumatoid Arthritis

Q.—*Is a vague generalized stiffness of the muscles on getting up in the morning an early sign of rheumatoid arthritis? If so, what treatment should be undertaken? The case in question is that of a woman of 35 whose mother developed rheumatoid arthritis at the same age after the same early symptoms.*

A.—The symptoms in this case cannot be regarded as definite signs of early rheumatoid arthritis, but in view of the family history they call for careful investigation and close observation. The sedimentation rate should be taken, and repeated possibly at monthly intervals for a time, together with blood counts, morning and evening temperatures, and search for any possible infective focus. The only other treatment at this stage should be by general tonics, and especially cod-liver oil. There may be a nervous factor in the form of fear of arthritis, and reassurance must be emphatic if the investigations are negative. Contributory influences, overfatigue, deficient nutrition, worry, and anxiety must also be guarded against so far as is possible.

Curly Hair and Pregnancy

Q.—*Since the birth of my first child six months ago my hair seems to have lost its former natural curl. Is the curl likely to return, as there is no sign of it so far? If I were to have a "permanent wave" would it have an adverse effect on any natural tendency to curl which is at present dormant?*

A.—After the birth of a child it is quite usual for the hair to change character entirely. This is due to the endocrine rearrangement natural after pregnancy. Any patient in whom such a change is marked ought to be medically examined for evidence of endocrine dysfunction and treated accordingly. As a rule small doses of thyroid and large doses of vitamin B (whole complex) should aid the return to normal. If the normal periods have not been resumed oestrone may be indicated. A permanent wave carried out by the hot method would have no adverse effect on the natural tendency to curl. The waving must be done by a skilled operator, so that no over-drying effect is caused.

Autoserotherapy in Allergy

Q.—*In the treatment of allergic skin eruptions I have been advised to inject the patient's own blood intramuscularly in doses of from 1 to 12 ml. Is it as effective to take off a pint of blood, store it, and give the serum in graduated doses?*

A.—Autoserotherapy subcutaneously is usually considered as effective as and essentially the same as intramuscular autohaemotherapy. The treatment is empirical, and roughly the same amount of serum as of whole blood is used.

Mechanism of Rigors

Q.—*What is the productive mechanism of a rigor? What agents may produce a rigor?*

A.—The causes which initiate the train of events termed a "rigor" are ill-understood. It is generally held that the pyrogenic agents act directly or indirectly on the heat-regulating centres, for they are without effect in decerebrate animals. Another suggestion is that the locus of the action of these substances is peripheral, causing a flow of water from the vascular system to the tissues, with consequent reduction in the circulating blood volume and a decrease in cutaneous blood flow which initiates the nervous mechanism. Whatever may start the process, the earliest obvious change is cutaneous vasoconstriction, which, by reducing heat loss from radiation and convection, causes the body's temperature to rise. The sensation of warmth and cold depend on the skin temperature, which is a function of the blood flow through the superficial vessels. Cutaneous vasoconstriction thus results in a sensation of extreme cold although the internal temperature of the body is actually raised. The fall in skin temperature evokes the reflex which normally raises the body's temperature in such circumstances: this is the fine fibrillary contraction of skeletal muscles, experienced as shivering, with contraction of the smooth muscle to cause "goose flesh." Thus increased heat production is added to reduced loss, and the body's temperature rises rapidly. When it reaches a level which varies from case to case there is sudden relaxation of the cutaneous vasospasm, the skin flushes, and as the warm blood floods through the superficial vessels the patient's sensations change to those of intense heat. Heat loss by radiation and convection is greatly increased at this stage and may be further raised by evaporation of the profuse sweat which may bathe the body's surface. In patients with such disorders as malaria these changes are sufficient to reduce the body temperature to normal in an hour or two; where a rigor initiates a period of continuous fever sweating is absent, but a balance between heat production and heat loss is struck, so that the body's temperature is maintained at a constant, though higher, level.

Among the infective agents which produce rigors are certain bacterial "toxins," particularly those of the pyogenic cocci and the *coli* group; the malarial parasites; the rickettsiae; and *Leishmania donovani*. Although rigors are less common with infections due to viruses, they occur frequently at the onset of smallpox, sandfly fever, and influenza. Injection of foreign protein, particularly when intravenous, is followed by a rigor if the dose is large enough. The rigors which follow infusion of saline or blood transfusion are to be attributed to pyogens elaborated by bacteria contaminating the distilled water. Certain non-protein agents, especially those containing sulphur, have a similar effect.

Phlebitis in the Leg

Q.—*What is the best treatment for the phlebitis in the leg so often seen in middle-aged women? Has penicillin proved to be of any use in this condition?*

A.—Penicillin has been found to be of no value in any form of phlebitis except the suppurative or the septic type, where it is invaluable. Recurring phlebitis in middle-aged women generally occurs in varicose veins, and these should be treated radically by simultaneous ligation and injections if the patient is not too obese or the phlebitis is not part of a severe thrombophilic tendency. The active attacks should be treated by "elastoplast" support supplemented by padding above and over the actual clots. Dicoumarol therapy is also indicated during attacks, and very quickly brings them under control.

NOTES AND COMMENTS

Pyloric Stenosis.—Dr. T. N. NAUTH-MISIR (Brentwood, Essex) writes: I notice that in answer to a question on the use of methyl atropine nitrate in the treatment of congenital pyloric stenosis ("Any Questions?" March 20, p. 583) you state that four drops of the 0.6% solution in alcohol are required to 1 ml. of the watery (1 in 10,000) solution. I would like to point out that this is not accurate. One drop of the 0.6% alcoholic solution contains 0.1 mg. of methyl atropine nitrate (*Textbook of Paediatrics*, 1945, p. 621. Edited by Waldo E. Nelson. W. B. Saunders and Co., Philadelphia), and 1 ml. of the watery solution also contains 0.1 mg. Therefore one drop of the former is equivalent to 1 ml. of the latter. Absorption of the alcoholic solution occurs as soon as the drop is placed on the infant's tongue, unlike the "linguellae," which take a little while to dissolve. For this reason I think that the alcoholic solution is to be preferred. The initial dose is two drops placed on the tongue twenty minutes before each feed. This dose may be increased to three or four drops if necessary. It is rarely necessary to exceed four drops.

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